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Rubber Compounding Practice[1]

Preservation of Oil Softeners by Oil Soluble Anti-Oxidants—Test for Dispersive Effect—Mineral and Vegetable Oils, Pitch and Tar—Choice and Effects of Softeners

WEBSTER NORRIS

SOFTENERS frequently exert specific functions in a rubber compound other than to plasticate the mixing. Therefore care must be exercised in choosing them for use singly or in combination to produce desired results in processing and curing stocks for definite service.

In selecting a softener for a given problem in rubber compounding reference should be had to the manufacturers' claims for each softener. For example, some have only a lubricating effect. These serve to reduce the power required in milling. In calendering and tubing they give smooth surface to the stock and facilitate volume production. Other softeners favorably affect the tensile properties of the rubber compound; still others improve the curing rate of crude rubber, add tackiness, assist the aging quality, or by dispelling the surface tension of intensely fine pigments, allow them to be absorbed freely in the mixing and produce a stock of exceptional serviceability.

Oxidation of Oils

All oils are subject, more or less, to oxidation, therefore when used untreated in rubber compounding such special effect as they exert in producing tackiness of the mixing may practically disappear after aging a week or so. This loss of value does not occur in asphaltic fluxes, tar products, fatty acids or other chemically stable softeners. The preservation of oil softeners against oxidation has not hitherto received attention from producers. Recently the subject has received scientific study by a leading American company which has developed special oil soluble anti-oxidants adapted for the preservation of many kinds of oil.

It has been found that one anti-oxidant is not adapted for preserving all oils but that each type or variety of oil requires a special anti-oxidant. Whether used as softeners or for any other purpose where oxidation is not desired rubber compounders at no distant day will be justified in requiring oil softeners rendered proof against oxidation.

Test for Dispersive Effect

A simple and convincing demonstration of the dispersive effect of any softener can easily be made by the qualitative test first described by Bierer and Davis.[2] This test shows the relative dispersive efficiency of softeners by a convincing ocular demonstration. Briefly, the procedure consists in making a soft paste of zinc oxide or carbon black, for example, with kerosene. The latter, representing the rubber, allows one to witness what actually takes place when a given pigment is milled into rubber assisted by the softener under test. Kerosene can be added indefinitely to a pigment without dispersing it, but when a drop or two of a softener is stirred into the paste, if it possesses dispersive property, the pigment promptly yields before it like wax before heat and disperses completely. This test is so simple and easily applied that it should find favor with every rubber compounder.

Description of the tabulated groups of softeners is here continued from the point reached at the close of the first installment.[3]

Mineral Oils

Mineral oils of different grades are available for use in softening rubber for smooth and rapid processing and as protection against drying of stock. They add no increase of tack but give a smooth mold finish and prevent rapid drying out.

Rubber process oil is a medium gravity mineral oil, the chief requisites of which are that it shall be entirely neutral and have a boiling point above 250 degrees F. From 6 to 8 per cent on the crude rubber may be added in the mixing with the earthy ingredients. While the presence of the oil retards the milling time this loss is more than recovered at the calender and in the finishing. The tensile strength is slightly reduced when the oil is used, but not seriously.

Spindle oil is the lightest and most fluid of lubricating oils. Its gravity is from 27 to 35 degrees Bé, flash test 320-430 degrees F., viscosity 30 to 400 seconds Saybolt, at 70 degrees F., evaporation, not over 4 per cent. In rubber mixing it acts only as an emollient essentially like rubber process oil.

Petrolatum is the residual matters after the distillation of petroleum, purified by filtration through animal charcoal or bone black, ordinarily called char. It has a specific gravity of 0.840 and melts at 72 degrees F. It is of pale yellow color, translucent, slightly fluorescent, semi-solid. It consists entirely of hydrocarbons and is inert chemically. In rubber mixing it serves as a lubricant, forming a surface film over the ingredient particles, thus reducing the mechanical energy required for mixing. The mineral particles thus cushioned with oil do not exert any mechanical injury upon the rubber in flexing.

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[1] Copyright, 1927, by Webster Norris. Continued from INDIA RUBBER WORLD, October 1, 1927, pp. 1-3.

[2] *Transactions of the Institution of the Rubber Industry*, August, 1927, pp. 151-184.

[3] INDIA RUBBER WORLD, October 1, 1927, pp. 1-3.

Vegetable Oils

Cotton oil expressed from cotton seed is refined by adding to the oil just sufficient of caustic soda solution to combine with the free fatty acids and form a soap. The separation of the latter frees the oil of much foreign matter. As a rubber softener cotton oil serves as an emollient and when aniline was a popular accelerator served as a vehicle for its dilution for safe handling. Cotton oil is also a suitable softener for colored clothing stocks.

Palm oil is expressed from the cooked pulp of palm nuts. Commercially it is designated as Lagos and Niger. From these points on the west coast of Africa it is shipped in casks of about 800 pounds. In this form the material generally contains considerable water and dirt. Lagos clarified oil, however, is clean, free of water and is shipped in steel drums.

Fresh palm oil has an orange-yellow color, sweetish taste and odor somewhat resembling violets or orris root. Its melting point ranges from 76 to 95 degrees F. and specific gravity about 0.94. Its free acid varies from 12 to 79 per cent. As between Lagos and Niger oils the former contains the lesser amount of acid. At ordinary temperatures palm oil has the consistency of butter or lard and may be handled with spade or shovel.

Palm oil was one of the first materials to be used as a rubber softener and is still favored. It serves not only as an emollient but its palmitic acid functions to assist the cure by rendering zinc oxide soluble for the activation of the accelerator. As a stabilizer of curing quality palmitic acid rivals stearic acid because of its higher molecular weight. It is also cheaper.

In the mixing room slight scorching of batches sometimes occurs. In such cases a small amount of palm oil can be milled in and render the stock useable.

Pine tar oil is a softener mostly used by reclaimers rather than by compounders. The grade used is known as "Commercial." Its gravity is 1.035 at 15.5 degrees C. The boiling range has the following distillation points:

DISTILLATION POINTS OF PINE TAR OIL

Per cent Distilled	Degrees C.
Starts at	100
5	177
25	230
50	308
75	332
85	335

The residue is pine tar.

The moisture content of pine tar oil is well below 2 per cent and the Saybolt viscosity 39 seconds at 212 degrees F. In reclaiming it acts as a true softener and swelling agent on the vulcanized scrap. The swollen rubber is thus freely exposed to the action of the heat and chemicals used in the devulcanizing process. Pine tar oil contributes to reclaim excellent aging qualities and tensile strength. These features are attributed in part to the organic acids present, which are similar to those contained in crude rubber.

Resins

Common rosin or colophony is the resin remaining after the distillation of turpentine. Rosin is graded by color and cleanliness. That containing water is white or yellow, when freed of water by melting it is brown or black. It is brittle, tasteless and almost inodorous of smooth shining fracture. Its specific gravity is about 1.08. It softens at 160 degrees and melts at 170 degrees F.

It softens rubber only when it is warm and in that condition increases the tackiness of the rubber. Thus it renders cheap stocks available for frictioning or workable for molded articles. Rosin also is used in cements to facilitate their spreading and give good adhesion to texiles. The cheapness of rosin is its chief claim to a place in the list of rubber softeners.

Cumar is a neutral resin produced from coal tar. It is made in two melting points, hard grade, 170 to 203 degrees F., and soft grade, 104 to 136 degrees F. Cumar is a pure rubber softener and speeds up the mixing process 30 to 40 per cent in time, with a great gain in power and labor. From 5 to 10 per cent of cumar is used on the rubber content of a mix. The soft grade makes a decidedly softer stock than the hard grade and is used in frictions for tire fabrics or any double texture goods where a pure gum cement is used. It is also exceptionally valuable in rubber cements. The harder grade is used as a softener or flux in hard rubber of all kinds, including the hard rubber on the steel rims of solid truck tires. In this case it increases adhesion to the metal rim. It is also used in auto tire treads, inner tubes, hot water bottles and tubing of all kinds in the druggists' sundries trade. Either grade can be used as a softener in all colored rubber goods, as it in no way affects the color pigment or dye.

Pitch

Pitches are the solid residues from dry distillation of resins and afford plasticity to rubber stock while warm. They are of value in processing and much used in mold work.

Burgundy pitch is compounded gum made from long leaf yellow pine rosin in two grades, transparent and dark. It is practically a solution of paraffin oil in common rosin. Its formula varies with different manufacturers. A common mixing consists of rosin, 95 per cent, and mineral oil, 5 per cent, gravity about 1.07. The melting point varies from 176 to 212 degrees F. As a softener its chief value is to increase the adhesiveness of mixings at working temperatures while exerting some lubricating effect. It is used more especially in cheap frictions, and to add tack in low grade mechanical stocks.

Hardwood pitch or Fluxol is specially prepared from the distillation of hardwood. Its specific gravity is 1.16 to 1.19 and melting point 185 to 203 degrees F. by the cube method. It is always made to a definite melting point to secure uniformity of its properties. As a softener its function is primarily to provide plasticity of the rubber mixing at working temperatures as in calendering and tubing. Its presence provides very little softness to cold stocks. It is employed extensively in treads to facilitate tubing and in cheap mechanical rubber goods stocks to facilitate flowing in the molds. It mills readily into rubber and gives the compound a durable tackiness, thus making possible the use of cheapest stocks.

A soft grade of hardwood pitch can also be used to secure smoothly running stocks in tubing machines without impairing aging quality. In stocks where tackiness is essential as in tire frictions, tapes, etc., the soft grade is very effective.

Tar Products

Carbonex is a flaky product made from coal tar residue after removal of the light fractions by further heating. Its average gravity is about 125, melting point approximately 215 degrees F. The material contains no less than 40 per cent free colloidal carbon and the remainder consists of hydrocarbons. This exceptionally high carbon content and its colloidal character serve to differentiate carbonex from all other softeners, both as regards its composition and the physical properties it imparts to rubber. Carbonex fluxes easily with rubber at mill roll temperatures of 180 degrees F. The particle size of its free carbon content is extremely fine and is easily dispersed.

As much as 20 parts of carbonex can be incorporated into 100 parts of rubber without materially changing its physical properties. It ages well and does not affect the rate of cure of any of the types of accelerators used. Its use is not strictly limited to black stocks, for appreciable amounts can be added in the manufacture of tan colored molded goods, such as heels, soles, etc. The material offers exceptionally good resistance to abrasion and to tear, thus adding to the service value of tire treads, heels, etc. It also imparts a very smooth finish on molded articles, particularly those of low grade.

B. R. V. is a selected coal tar distillate consisting chiefly of high boiling constituents. It fluxes readily with rubber and imparts to heavily loaded stocks plastic quality that aids in smooth calendered work and ease of tubing. Its effect as a binder assists materially in the resistance to abrasion of compounds in which it is used. It is, therefore, of particular interest in the manufacture of tire treads, heels, soles, belting and hose covers, etc. B. R. V.

stocks age well and for this effect from 1 to 3 per cent on the rubber content is used. In proper amounts it can be used in all black and dark colored stocks, but not in white or those of light colors.

Coal tar is a favorite softener in the rubber footwear industry. It is a by-product from the manufacture of illuminating gas from coal. It is commonly used in two consistencies, hard and soft. The first is stiff enough in cold weather to require moderate heating in order to flow freely, while soft tar is fluid, except in extreme cold weather. Coal tar should be free of water and practically so of light oils. It, however, contains considerable free carbon and consequently is used only in black stocks. A peculiar feature of coal tar is that the oily portion of it works through the rubber both during and after vulcanization of the goods. Because of this fact a stock containing coal tar cannot be used even for inside parts of a white shoe as the tar will penetrate the white stock and cause a brown discoloration outside.

Pine tar is the product by distillation in kilns or retorts of resinous pine wood. The product from the former is not suitable for rubber work because of its dirt impurities. Retort tar is a well made product free of dirt and foreign matter other than water. As produced under specifications its moisture should not exceed 2 per cent. Pine tar is somewhat of an accelerator as well as a softener. It has no vulcanizing effect alone, but by its use the amount of litharge required is reduced. This, of course, tends to reduce the volume cost of the stock. Compared with coal tar, pine tar has a much greater softening effect.

Pigmentar is the trade designation for three consistencies of standardized pine tar prepared for use as softeners for rubber compounding. These tars are produced by retort distillation and have the following gravities at 60 degrees F. and specific viscosities at 25 degrees C. by the Stormer viscosimeter:

	Gravity	Viscosity
Thin	1.065	75
Medium	1.075	275
Heavy	1.085	3,500

Compared by distillation range practically nothing distils from these grades below 170 degrees C. indicating absence of turpentine and similar oils. Thin tar distils 85 per cent between 178 and 335 degrees C., at which point it breaks down. Similarly the initial and breaking down points for medium tar are 178 and 338 degrees C. with loss of 75 per cent. For hard tar the corresponding points are 211 and 346 degrees C. with loss of 60 per cent.

Other characteristics of these tars are their freedom from soda soaps and very slight acid reaction in solutions of alcohol or acetone.

Paraffins are the waxy hydrocarbons deposited from mineral oil in which they are dissolved, by cooling to a low temperature. They are fully saturated compounds and without tendency to combine with any other substances. At ordinary temperatures they are scarcely affected by strong acids.

Paraffin is offered commercially as crude scale or refined in block form. The scale contains some oil, while the refined is oil free. The melting points are, scale, 122 to 124, and 124 to 126; refined, 120 to 122 and 125 to 127 C. Specific gravity of refined paraffin is 0.93.

In rubber compounding, paraffin exerts a lubricating effect. It serves to protect the rubber from aging by displacing air entangled by the mixing process and thus helps to prevent oxidation and hardening in storage. Its presence provides a smooth finish on tubed products. Care must be exercised, however, not to employ it to excess, otherwise it may appear on the surface of the finished goods as a light waxy bloom.

CURRENT LIST OF SOFTENERS

Compounded
Dispersol
Fluxol
Lead Oleate
Moldrite
Plastone
Tackol

Asphaltic Fluxes
B. R. H. No. 2
Fluxrite
Flux Oil
Para Flux

Paraffin Wax

Oils and Greases
Degras
Woburn
Cycline
Rosin, pure
Rosin, compounded
Petrolatum
Rubber Process
Spindle
Cotton
Palm
Pine

Fatty Acids
Oleic, Red Oil
Stearic

Resins
Colophony
Cumar

Tar Products
B. R. V.
Carbonex
Coal Tar
Pine Tar

Pitch
Burgundy
Hardwood

Choice of Softeners

Degras, flux oil products, palm oil, petrolatum, mineral oil, pine tar, rosin oil and stearic acid are standard softeners for general use. The more extended list described is drawn upon by every division of the industry.

Economy and convenience of processing are usually the determining factors controlling the choice of softeners, while cure, tensile properties and aging value are hardly less important. Frequently two or more softeners are used in the same mixing when special effects are sought. This practice is illustrated by the following group which is entirely practical for general work and recommended when hard or soft carbon blacks, clays, etc., are present in quantity. The items of the combination are, reclaimed rubber, M. R., stearic acid, pine tar and degras. All of these materials contribute to expediting mixing and saving in the power required. The reclaim and M. R. reduce volume cost. The reclaim and degras, in particular, disperse the reinforcing pigments very completely. The stearic acid acts similarly with regard to zinc oxide and stabilizes the cure of the crude rubber, while the pine tar acts as a mild accelerator, improves the tensile properties and protects against aging of the product.

Effects of Softeners

The following remarks on softeners are quoted from a paper by Aultman and North.[4]

"Compounding rubber into softeners gives a wide variation in characteristics of both cured and uncured rubber. In the milled batch the rubber becomes more plastic and more easily worked even when extremely small amounts of some substances are incorporated. In the cured product the most notable effect usually is the lowering of the stress-strain values of the stress-strain curve and the increasing of the elongation more than warranted either by retardation of sulphur combination or mere filling action. There is some effect on the properties of the rubber mix diametrically opposed to that of finer pigments when added to rubber. The pigments make the stock less plastic, raise the values of the stress-strain curve and cut down the elongation. This effect varies greatly, depending on the softener used. It can easily be explained by the assumption that the softeners have some action on the rubber aggregate itself."

W. N. Burbridge, in his paper, "Rubber Softeners," suggests that rubber softeners may be classed in two groups, according to their emollient effect. The first group includes M.R., bitumens and probably pine tar pitch. These effect a physical change on the rubber by entering its nucleus and swelling it without rupture. This group is designated *true softeners* because they produce thoroughly homogeneous rubber which remains so after vulcanization, and in many cases they produce improved physical constants.

The second group, or *pseudo softeners* do not combine to any extent with the rubber nucleus, but are dispersive, that is they break down the agglomeration of rubber particles by surrounding them, acting more as lubricants. This class includes paraffin, vaseline (petrolatum) and some fatty acids.

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[3] "Rubber Softeners." By P. M. Aultman and C. O. North, presented before the Rubber Division at Meeting of the American Chemical Society, Pittsburgh, Pennsylvania, September 4 to 8, 1922, INDIA RUBBER WORLD, July 1, 1923, pp. 638-9.

[4] *Transactions of the Institution of the Rubber Industry*, April, 1926, pp. 429-448.

Cleaning Hydraulic Press Plates

The Advantages of This Power Device for Press Plate Cleaning Are Very Apparent

PLATED sheet packings, belting and other goods vulcanized flat under pressure are cured against the polished surfaces of hydraulic press platens. In order to impress upon the rubber surfaces a fine smooth finish the curing surfaces of the platens are ground as smooth and true as possible. The surfaces of the rubber to be press plated and cured are dusted with soapstone or talc to prevent adhering of the rubber and thus permit handling in and out of the press without damage.

Every heat of goods vulcanized between the plates leaves upon them a slight deposit of sulphur and soapstone hardened by the binding effect of the sulphur expelled from the rubber by heat and pressure. In the same way a hard scale forms on all mold cavities, the deposit being hastened by the soap used for lubricating the mold. This deposit of scale not only gives a dull surface to the goods but, when allowed to become thick, may come off in patches. Wherever this occurs articles subsequently cured receive a rough effect in relief giving an unsightly scabby appearance to the goods. Mold scale is removed by abrasion with emery cloth or sand blast, etc.

In the case of flat surfaces like press plates the means adopted for its removal are by scraping tools operated usually by hand.

Press platens are in some cases as large as 5 by 30 feet. In any event such plates present a tedious job of cleaning by the usual hand scraping method. The labor of cleaning the lower plate is, naturally, much less than that required for the upper one. In the latter case workmen scrape the plate while lying upon their backs between the cooled plates and in this uncomfortable position slowly remove the hard scale. This painfully slow method, however, is not always used since it is more feasible for a workman to clean the upper plate while standing outside the press by using a long chisel edge bar resting in a sling serving as a fulcrum. The same tool may be used supported on the workman's shoulder to clean the lower plate. This hand tool and method of using it is shown in Figure 1. *A* indicates the working position of the tool supported in a sling against which the workman exerts downward pressure forcing the chisel edge of the bar through the scale, scraping it off ahead of the push of the advancing tool.

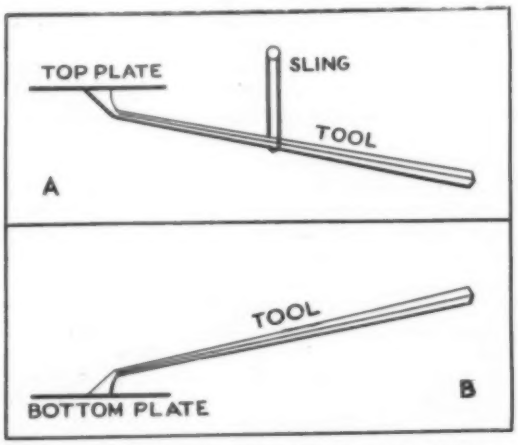

Fig. 1.—(A) Applying Hand Tool to Top Plate. (B) Applying Tool to Bottom Plate

B indicates the working position when scraping the bottom plate. In this case the workman causes the scraper to penetrate and force the scale from the plate by bearing down in the center of the tool the outer end of which he supports on his shoulder as he shoves the tool to its work.

As a relief from the drudgery involved in the hand cleaning just described there has now been invented a power scraper that enables press plates of any size to be cleaned while at the vulcanizing temperature and in a small fraction of the time consumed by the hand method. The machine shown in section in Figure 2, is essentially a reversible rotary device having on one side a plate serving as a tool holder and on the other a spring supported plate. When compressed between the press plates the springs afford a yielding pressure on the cutting tools. These may be either steel cutters or knives for starting and scraping the scale, wire brushes for cleaning or sheets of emery cloth on pads for polishing. The tools are bolted on a rotatable disk holder and in operation the machine can be moved bodily between the press plates to traverse and clean their entire surfaces. The machine may be driven by a pneumatic rotary motor or by an electric motor.

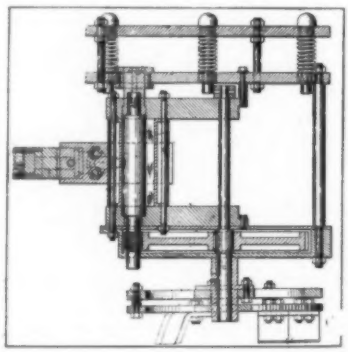

Fig. 2.—Reversible Section of Power Press Plate Scraper

One of the important features of the machine is that it may be employed for cleaning either upper or lower plate at will, for after one plate has been cleaned it is only necessary to withdraw the device and reinsert it between the plates in an inverted position whereupon it is in readiness to clean the opposite plate.

TIRE TREAD COMPOUNDING

In no type of rubber compounding has more notable progress been made than in the development of tire tread stocks that possess the maximum in tensile properties and ability to resist abrasive wear. Carbon black, that so-called "King of Rubber Pigments" is without doubt the master reinforcing material.

Two years ago the proportion of carbon black to rubber used in tire treads was 40 per cent. Last year it was 42.5 per cent. This year it has advanced to 50 per cent and research results in the leading tire compounding laboratories are still further advancing the proportion. The practical reasons are found in lower costs, greater mileage and more profits to the tire manufacturer and increased satisfaction on the part of the user. The 50 per cent ratio assures lower manufacturing costs, stronger reinforcement and better understanding of the use of such softeners as stearic acid and accelerators.

The research men of the leading manufacturers of carbon black share with those of rubber works the credit for this advance in compounding development.

The Physical Testing of Asbestos Brake Linings

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IN the past three or four years greater attention has been paid to brakes and their design and, as a consequence, brake linings have been studied and improved greatly. Research work on the subject has been carried on by car manufacturers, lining manufacturers and the United States Bureau of Standards. The result has been a much better understanding of brake lining characteristics and their application to brake requirements. Further studies will doubtless increase the scope of this knowledge and lead to even greater improvement.

The following article gives a general discussion and some random observations on tests, and reveals certain characteristics of brake linings, but cannot, naturally, touch on more than a small portion of work that has been done.

Every time a motor car is stopped the kinetic energy represented by its momentum must be converted to some other form of energy, usually heat energy. The mechanism to produce this result is generally the application of pressure through a stationary member, such as a brake band or shoe, upon a rotating member, such as a brake drum. The rubbing of the surfaces of these two members results in frictional heat. The material used on these surfaces must create a high frictional resistance and withstand the heat developed. They must also operate smoothly and uniformly together. There has been nothing found, as yet, to surpass the conventional steel drum as the rotating member, and the steel band or shoe lined with asbestos brake lining as the fixed member.

Types of Brake Lining

There are two major types of asbestos brake lining. So-called "folded and stitched linings" are made by frictioning asbestos cloth with a rubber compound and folding the cloth to the number of plies necessary for the thickness sought. This is then placed in long open presses, compressed under hydraulic pressure, and vulcanized. The woven type consists of woven asbestos tape of the required thickness and width which has been impregnated in a hydrocarbon or asphaltic solution and baked. See Figure 1.

The yarn in the asbestos fabric consists of several cotton and asbestos strands and one or more strands of brass wire twisted together. The cotton is used in the yarn to "carry" the smooth asbestos fibers for economical spinning. The brass wires are inserted for mechanical strength and also have some bearing on the rate of wear and the coefficient of friction.

The two vary considerably in the proportion of asbestos fabric to treatment (hydrocarbon or rubber compound) and a wide variation is found in different makes of the same types. The table below gives an idea of the general composition by weight:

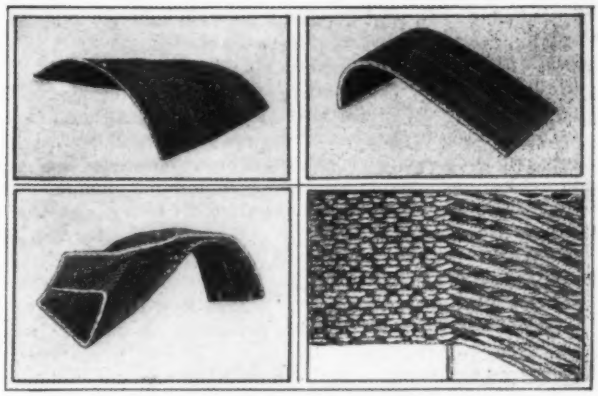


Fig. 1. Folded and Stitched Rubberized Linings—Impregnated Woven Brake Lining

MATERIAL	FOLDED AND STITCHED Per Cent	WOVEN Per Cent
Asbestos	50 to 65	82 to 94
Treatment	35 to 50	6 to 18
Cotton in asbestos cotton mix	0 to 35	0 to 35
Wire in fabric	15 to 30	20 to 40
Combustible matter in treatment	26 to 60	100

The function of the treatment is to bind the fibers and the plies of fabric together into a uniform, solid mass; to control the coefficient of friction and to increase the wearing quality. While the "folded and stitched" linings have less asbestos fabric, inorganic fillers are used in the rubber compound to produce extremely long life. To reduce the amount of combustible matter, the percentage of rubber in the compound is kept very low.

Testing Machines

In the design of laboratory machines for the physical testing of brake linings the idea has been to get a test of short duration to approximate the work a lining must do in the course of a couple of years on a car. The testing machines now in use all fall far short of the ideal but they do give a means of studying the action of the linings under a fixed set of conditions. The variables in the different machines, rubbing speed, frictional power absorption, size of test piece, temperature developed, etc., make it impossible to check between them. One lining will show up better on one machine than another and vice versa. A lining with a high percentage of combustible matter will be destroyed quickly on a machine which runs at a high temperature and yet, if the test temperature is kept down below the destruction point, the lining may show extremely long wear. The high temperature may destroy the binding properties of the treatment, a condition which represents the extreme of severe service. The drum may be made of low carbon content steel which quickly cuts and grooves and these surface irregularities will tear the lining apart. The initial smoothness of the drums and the freedom of the machine from vibration will also greatly affect the tests.

On the other hand the lining which will suit the brake design on a particular car may not be satisfactory for another. Factors such as the ratio of pedal pressure to actual brake pressure, the amount of wrapping or self-energizing action, ratio of braking surface to car weight and rigidity of the entire mechanism make a soft, limp lining necessary in one case and a hard, dense, firm lining advantageous in another.

In consequence of these variations laboratory tests cannot be taken as a complete story but are only indicative. The tests will show the behavior of the lining, give the coefficient of friction and the rate of wear under certain specific conditions. The complete result can only be obtained by actual use in road tests under all conditions.

In Figure 2 are shown two brake lining testing machines which

illustrate in principle the majority of test equipment. At the right is seen an older form of Bureau of Standards machine. This consists of two flexible bands *A* upon which brake lining 2 inches wide by 11 inches long is mounted. These are pressed against the rotating drum *B* by turning down nut *C*, the amount of pressure being read on dial scale *D*. The torque, or force, necessary to prevent a rotation of the equipment with the drum is registered on platform scale *E*. The usual method of operation is to keep the power absorption (indicated by platform scale reading) constant thereby keeping the lining temperature constant. The pressure on the bands, as indicated by the dial scale, is varied as the coefficient of friction changes.

At the left in Figure 2 is a machine in which a 2 by 6½-inch piece of brake lining, mounted on a solid shoe *F*, is run against a water-cooled roller *G*. The shoe is mounted on a bar fulcrumed at a point on rod *H* while the normal pressure is obtained by weights on the opposite end of the bar. The pressure in this case is held constant throughout the test and the variation in coefficient of friction noted by the change in power consumption on a recording wattmeter. The water-cooled roll is built with a series of bands or rings of steel, bronze and cast iron of different hardness to permit of a wider range of tests.

The construction and operation of the testing machines in use varies greatly. Some have high rubbing velocities, some low. One uses two test pieces 11-inches long, another will concentrate

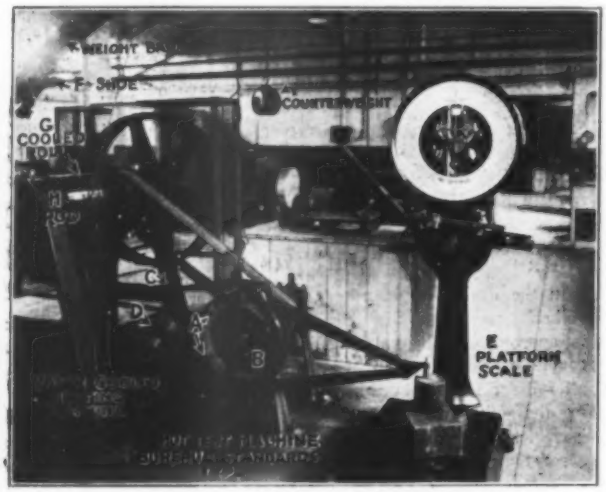


Fig. 2—Brake Lining Testing Machines

the pressure on a small piece. Some machines are operated intermittently, others run continuously throughout the test. All try to get a good picture of the coefficient of friction and rate of wear.

Characteristics of Brake Linings

The results of a typical test on the Bureau of Standards type machine are shown graphically in Figure 3 where coefficient of friction has been plotted against time. Starting at a comparatively high figure the coefficient of friction quickly drops to about .120 and then gradually rises to a higher, more constant, level which is maintained to the end of the test.

The low dip in the early stage of the test is a period where, due to the heat developed, the treatment softens and lubricates the contact surface. When the combustible or volatile portion of the treatment is destroyed or driven off the coefficient of friction gradually rises to its normal value. There may also be included in this rise a slight effect due to the lining surface compacting itself, wearing smooth and eliminating "high spots" thus giving greater surface contact.

During the test the wear is found to be the greatest when the more combustible constituents are driven off. After this "low coefficient" period the wear usually varies in proportion to the coefficient of friction.

A coefficient of friction curve from a test on the cooled roll machine is shown in Figure 4. Here we find the same general characteristics with the drop in coefficient of friction in the early stage of the test and the gradual rise to a normal value. It is to be noted, however, that the drop is not as low or as protracted as under the hot test. This is doubtless the effect of the lower temperature and is more nearly that developed in ordinary service.

Temperature Effects on Linings

For the sake of comparison the results of tests on pieces from the same roll of brake lining with the two machines have been plotted in Figure 5. This shows graphically the difference in behavior of a lining under different temperature conditions. When extremely high heat is developed, as in the lower curve, the coefficient of friction drops to .10 and remains at that low figure for more than four hours. On the cooler test the coefficient only drops to .310 and immediately starts to recover. This effect is typical of most brake linings though the length of time that the coefficient of friction remains at a low figure varies somewhat with the character of the treatment.

This same effect is noted if the temperature is varied on the same machine. A series of four tests was run on the cooled roll machine each with a different normal pressure but using pieces from the same roll of lining. An increased normal pressure naturally increases the surface temperature and, as can be seen in Figure 6, the greater the pressure, the lower the initial drop in coefficient of friction and the longer the time required for recovery. It is interesting to note that the final coefficient of friction on all four pieces is very close in spite of considerable variation earlier in the test. The increase in normal pressure appears to have made the performance of the lining more erratic. Under the test the samples lost about 20 per cent of their original weight.

In describing various types of testing machines, one with intermittent application was mentioned. To get the same effect the cooled roller machine was run with alternate applications and rest periods using the same lining as in the tests shown in Figures 5 and 6. The results are shown in Figure 7. The lining was first run for two hours to try to get over the "low dip" period in coefficient of friction. Then the lining was raised out of contact with the roll for half an hour, this length of time being sufficient to bring the lining and roll back to room temperature. The lining was again placed in contact with the roll, this time for an hour and followed by another half hour interval. Three one hour periods were run in this fashion and finally the lining was held in contact for five hours until a fairly constant coefficient was reached.

The initial coefficient of friction with the lining cold at each application builds up to a high point quickly and then gradually drops to a low point as the temperature rises. As can be seen from the last application period, if the time of contact is lengthened, the coefficient of friction rises to a constant point and then continues at that level.

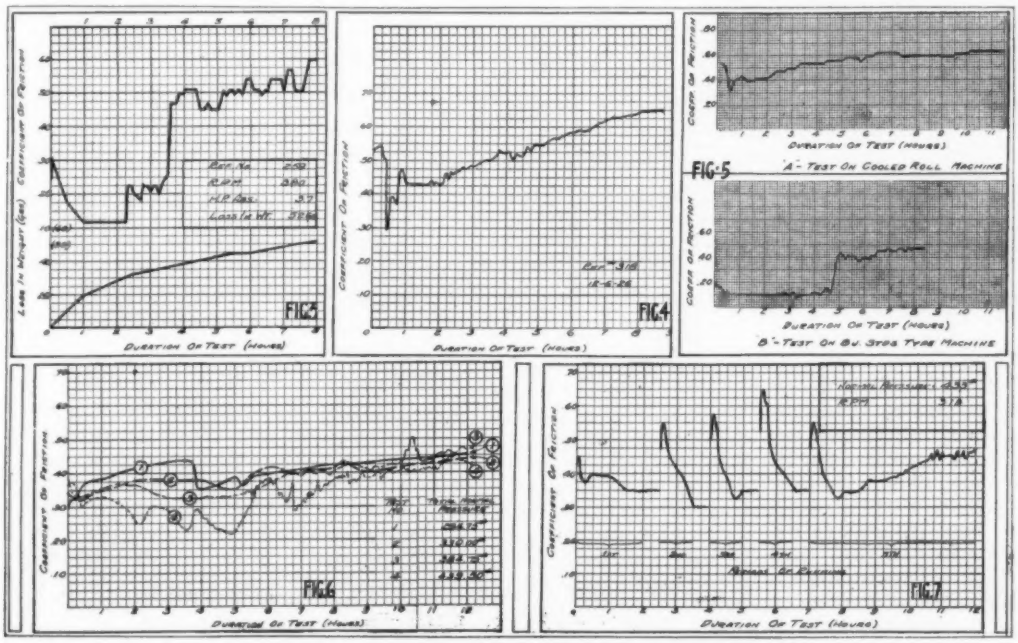
In actual service each brake application is made at the point of this high initial coefficient of friction. Even on a down grade of fair length the point of very low coefficient is not reached as can be seen from the time required to reach the low point. It is possible, however, that, when a lining becomes old and has been heated many times, it will show a coefficient of friction about the value reached at the end of the final period.

Effects of Compounding Ingredients

The impregnant in woven linings and the compounding ingredients in the friction of folded and stitched linings very largely determine their character. The wear can be varied through a wide range as well as the coefficient of friction. For long wear the goal naturally sought is to obtain the greatest amount of binding power with the least use of materials combustible at temperatures developed in service. If the compound "flows" under the heat, the brakes will stick and grab. If the compound becomes

hard, it wears off as a dust and a rough acting brake results due to its presence between the lining and the drum. If the surface of the lining becomes "waxy" from oils or other ingredients, a low coefficient of friction results which means that greater effort must be exerted at the brake pedal to get proper retardation.

heat. Other ingredients such as gilsonite, drying oils and bakelite can be added to produce harder linings. Waxes will reduce the coefficient of friction. The proportioning of these and other ingredients in the mix will determine the character of the lining. It is interesting to note, however, that a higher coefficient of



Figs. 3, 4, 5, 6 and 7. Graphs of Brake Lining Tests

To study the effect of the ingredients in the friction compound of folded and stitched linings, the data given for test No. 318, in Table 1, may be compared with that for tests No. 328 and No. 337 all run on the cooled roll machine. The compound in the lining used in test No. 318 had an ignition loss of 61 per cent the combustible materials being rubber, reclaim and a fair amount of oils. Here we have a drop to a low minimum coefficient of friction and the wear per hour is 4.65 grams.

TABLE 1—EFFECTS OF COMPOUNDING INGREDIENTS

Test No.	Ingition Loss	Loss In Weight Grs./Hr.	Coefficient of Friction Max.	Min.	Aver.
318	61%	4.65	.645	.292	.510
328	40%	2.33	.630	.342	.527
337	34%	1.66	.792	.450	.645

The compound for the lining of test No. 328 had an ignition loss of 40 per cent with practically no oils or constituents combustible at the lower temperatures. The effect is immediately seen in a higher minimum and average coefficient of friction and the reduction of the wear to 2.33 gr. per hour. The compound cured up "hard" under the heat of the test causing the rather erratic action noted in the curve.

In the test No. 337 the friction compound had an ignition loss of 34 per cent with the sulphur and accelerator cut down to prevent vulcanizing hard. A very small amount of stearic acid and petroleum caused a drop in coefficient of friction at the start but the curve continued smooth and uniform. The wear has dropped to 1.66 gr. per hour due to the better binding effect of the friction compound under heat.

These cases show how much can be gained in wear and uniformity of coefficient of friction under this type of test where the heat developed is about that of moderately severe road service. Under tests where higher temperatures are reached the combustible material driven off would change the characteristics somewhat but the ratios between them would still hold good.

With the woven type of linings similar variations can be obtained. Soft hydrocarbons will give a soft lining, tacky under friction can be obtained in a rubberized lining than in any impregnated woven lining.

The factors discussed here have been mainly coefficient of friction and wear. Many other points are involved in the proper functioning of the brake lining. Swelling under heat and under moisture must be kept at a minimum because of the close limits in fitting brakes. The effect of water, mud and oil on the coefficient of friction should be nil. The cutting or scoring effect of the material on brake drums of higher or lower carbon content is an important point. As has been mentioned before, the hardness or softness of the lining may have a considerable bearing on its suitability for use on a particular brake job. We still have a long way to go before we can make the "perfect" lining and, as time goes on, new types and designs of brakes will possibly require brake linings of entirely different characteristics from those produced today.

BUREAU OF STANDARDS NEW GROUPING

Changes in the administrative organization of the Bureau of Standards have been announced by the director, Dr. George K. Burgess. Under the new grouping Dr. L. J. Briggs becomes assistant director in charge of research and testing, and Ray M. Hudson is made assistant director in charge of commercial standards.

The group headed by Mr. Hudson covers the supervision, direction, formulation and coordination of commercial standards, with particular reference to the needs of industry, including oversight of the division of simplified practice, division of commercial standards, and part of the work of the division of building and housing relating to codes and standards.

IN A LIST OF THE FIFTY CHIEF EXPORTS ACCORDING TO VALUE, January-June, 1926 and 1927, published in *Our World Trade*, automobile tires takes eighteenth place with a value of $19,604,000. This shows a gain of 29.6 per cent over 1926, when a total of $15,129,000 was reached.

Progress In Footwear Making

DURING the last two years many radical changes have been introduced into rubber footwear methods, so that soon the entire manufacturing scheme will be unrecognizable to men of the old school. It may be interesting to rubber men who have only a cursory knowledge of the footwear branch to know some of the recent changes in the production of rubber shoes.

In the field of compounding much has been done, but there are many possibilities not yet touched upon. Organic accelerators are used especially in the steam and pressure cure stocks, and anti-oxidants are being employed in some instances. The dry heat for varnished goods is still in vogue, but with litharge as a curing agent. The use of reclaim has not been extended as much as it has in the tire industry, a condition which is due primarily to the non-adaptability of high-grade reclaims to footwear conditions. Shoe reclaim finds a wide use as a plasticator in cheap sole stocks and uppers, frictions, and coatings. But its use is restricted by its high gravity and low tensile strength, compared to tire and tube reclaims. Tire reclaims are used in solings in conjunction with shoe stocks but find sparing use in uppers of light gage because they cannot be sheeted to uniform gage.

In the mixing department, the use of internal mixers has been somewhat retarded by the wide variety of footwear compounds, as factories making the full footwear line usually carry over a hundred stocks. In fact the total volume mixed in most footwear plants could be handled in one large Banbury, but the prevalence of so many light colored stocks makes this impractical.

It is in the calendering and cutting departments that the first signs of the new order appear. A machine is in experimental operation to cut uppers on the calender with a capacity of 10,000 pair in 8 hours, whereas the hand method has a maximum capacity of 800 pair per man in the same period. Storage space for stock on frames is also eliminated.

Foxings, which is the rubber footwear term for strips of gum compound used to make up the part of the shoe just above the sole, have been cut by the hand operation of knife and bar for many years. Recent attempts to cut them at the calender have been successful, and this is now common practice in some plants. However, there is a machine on the market known as the Cameron slitting machine which does this work.

Production of both uppers and soling has been speeded up by the use of overhead conveyers for handling roll changes. Spur monorail systems have been installed so that when a roll must be changed the next roll is ready to be slid into place without undue loss of time. Conveyers to carry soling stock from the calenders to the cutting department have been improved upon and marked strides have been made in the method of storing sheets of soling by the use of new types of racks.

In calendered fabrics no radical changes have been made except that the installation of wider looms in the southern textile mills has made possible wider fabrics. The savings on running 54-inch sheetings and osnaburgs over the old 36 and 40-inch fabrics is considerable both in machine time and man hours at the calender, and in the doubling and cutting as well.

THE rubber footwear industry is perhaps the oldest branch in the field, the first manufacturing operations antedating the discovery of vulcanization by Goodyear. In fact the majority of plants in operation today were in production in the latter part of the 19th century. For this reason plant processes and methods have become well fixed by tradition, and even the modern laboratory control has retained many of the compounding methods handed down from the rule of thumb days. Not longer than three years ago a practical rubber footwear man who had been out of the game for twenty years asked one of the younger men of the industry if certain methods were still in existence, and the answer in the majority of instances was in the affirmative.

The fabric cutting department, which formerly operated as a unit, is now being split up as the cutting operations are transferred to the assembly units on different classes of materials. The savings here are in handling and elimination of that old shortage bugbear of the shoe factory, the "odd" ticket. At one leading company the cutting of cloth tennis uppers is now done in the stitching department by girls using double clicking machines. They not only cut the parts but assemble them in case lots for stitching. In another plant the cutting of fleece gaiter linings has been done at a new rotary cementing conveyer, where the linings are assembled and cemented for the making teams. Preparatory cementing is now largely a machine job, machines being used for cementing the edge of tennis tops, insoles, and both sides of rag parts in one operation.

Quarter making, the footwear term for making up gaiter tops, has been put on a quantity team production basis. Every operation has been segregated and the operators on each unit stationed adjacent to a slow moving belt conveyer, on which the parts move from operation to operation until the finished quarters arrive at the end of the belt for booking for the makers. The former hand operations, such as inserting the buckle in the strap, are performed by machine at a rapid rate.

In the making department, the old order has changed more radically. All classes of shoe making have changed over to the conveyer method. The shoe starts with a last, which acquires a lining and insole, then the quarter, foxing, and outsole, which is pressed on by machine at the end of the conveyer. From this point the completed shoe is placed on the car and rolled into the vulcanizer.

Lasting of tennis shoes is now practically all done by machine, a new unit having been developed for doing this job which has great possibilities.

In the varnishing department a new gaiter varnishing machine works as successfully as the rubber varnishing machine which has been in operation many years. New vulcanizers are practically all of the horizontal type, with pressure controls and well charted for perfect vulcanization control.

Trimming of surplus lining in the packing department is now machine performed. Automatic machines are provided for inserting the snap buttons which the new novelty gaiters all require. Packing has now changed over almost completely from wood to fiber and corrugated boxes. Cases move to the shipping department by conveyer, and are laid out in the warehouse by orders so that shipments can be made without delay.

The net result of these improved methods has been the shortening of the time required to run a ticket through the mill. This has reduced inventories in process, made for quicker deliveries to customers, and put the rubber footwear industry in good position to meet the present day hand-to-mouth buying demands of the retail and jobbing trade.

Although the transition from the old methods to the new has only begun, the fact that the wall of tradition has been broken down, augurs well for the advances which will be made in rubber footwear in the next few years.

Molding Black Tires

The solution of many problems in compounding, tire construction, workmanship and mold lubrication is involved in avoiding shy-molded tires

C. E. MAYNARD[1]

Fisk Rubber Co.

View in a Heater Room Where Tires Are Molded

IN molding a black tire three difficulties are generally encountered, that of maintaining perfect blackness of the tire, the cracking which occurs between the unions of sidewall and tread stocks, and what is known as the shy problem common in all molding work. The word "shy" as used here describes that type of defect where the tire has not completely filled the mold.

It is obvious that producing a normal black tire is dependent chiefly upon the mold lubricant. The chief function of a lubricant is to prevent the tire from sticking in the mold, thus preventing air trapping. In order to be perfectly satisfactory, a lubricant must combine with the rubber so that no discoloration will result. Further it must combine so well that the unions of the sidewall and tread will not crack open where minute quantities of the lubricant remain deposited. Generally speaking a lubricant is not the cause in itself of shy or imperfectly filled out tires. These are generally caused by air trapping in ways which will be discussed later. The lubricant merely alleviates air trapping. When a mild lubricant is used, such as starch or zinc stearate the causes of shys become more effective. No lubricant entirely eliminates the effect of these causes but there is a great difference between the results obtained from various lubricants. Fats of various kinds can be used as lubricants but if applied to the tire or mold in sufficient quantity to be effective they leave an unabsorbed residue on the tire giving a bad appearance. In fact they are so quickly absorbed by the tire that their effect is for the worse.

Finely ground minerals of many kinds can be used as lubricants providing discoloration of the tire is not to be considered. This discoloration is due entirely to the lack of those characteristics which make the lubricant used readily absorbable by the tire. The desirable characteristics upon which absorption seems to depend are the size of the particles and their non-agglomerating tendencies. When a mineral is agglomerate it tends to gather into little compact masses and the individual particles do not enter the rubber separately but rather in groups. Thus large masses of them do not enter at all during the molding period, consequently discoloration of the tire results. One of the chief reasons why one mineral is more agglomerate than the other is due to the shape of the particles. A mineral with burr-like particles naturally is going to stick together more than one that is flat-faced.

Muscovite, or what is commonly known as mica, has a flat plated particle and consequently shows very little tendency to agglomerate, but due to its scaly structure it tends to bank against the surface of the tire during the molding period and is thus prevented from being readily absorbed. On account of this condition mica has to be used very sparingly upon some stocks. An excessive amount of it will not only cause the tire to come out considerably whitened by the mica but the unions will open up when the tire is flexed. Rubbing a tire after the application of mica to remove the excess and also to rub in the little particles themselves tended a great many times to eliminate discoloration and cracks. Another form of mica called sericite which has not the flat plated structure that muscovite has, but rather a fibrous crystalline structure, was found very satisfactory for molding purposes. This mineral when finely ground can be absorbed quite readily by the tire and causes very little discoloration. Due to its good absorption qualities it was found that sericite could not be used alone on some stocks. When this happened a certain amount of muscovite is used with it to retard its absorption and better results are obtained.

If absorption is too fast a lubricant does not stay upon the surface of the tire long enough to allow it to relieve the trapped air. At the same time if the lubricant is completely absorbed then it is extremely difficult to remove the tire from the mold. To relieve this situation it is necessary when using a lubricant which is being completely absorbed during the molding period to wash the mold with a solution such as soap bark so that the tire can be removed readily. Dilute emulsified petroleum solutions are also satisfactory for this work. Soapstone, talc or graphite are also fair lubricants for black tires but none of them seemed to be able to meet all conditions which one encounters in molding black tires.

In order to ascertain the relative difference between the absorption characteristics of various lubricants a rough test can be made as follows: A test piece of sidewall or tread stock about 6 by 4 by .075-inch is evenly spread with .2 gram of whatever mineral is being studied. These slabs when cured show various degrees of discoloration from a very white mottled condition to a perfect black color.

It is fairly well established that tires which have not completely filled the mold in spots are caused by air being trapped between the tire and the mold during the cure except in some instances where moisture causes trouble. The following are a few of the causes of trapped air that have been encountered:

The construction of the tire has a bearing upon shys molding. The uncured tire should be very nearly in general contour to that of the cured tire. All indentations and grooves that do not correspond to mold shape should be avoided as far as possible. One source of trouble is the depression between the edge of the tread and the chafing strips when a separate sidewall construction is used. Lessening the depth of this depression by cutting down the thickness of the tread edge reduces the trouble. Substituting an integral tread and sidewall construction is a more satisfactory manner of improving this situation.

The bead of the tire is another place where the construction can enter into the shy situation. It should be noted that the mold in closing registers at the bead first and tends to seal the tire in the mold at this point. We can assume that some air

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does escape at the registration of the bead ring and the mold. Now if for some construction reasons the bead is bigger than the cavity can conveniently hold, the mold is held proportionately further away from the tire wall and when the hydraulic and internal pressures are applied more air will be in the mold than ordinarily. The registration, therefore, closes sooner due to the excessive stock present and air trapping thus made more effective.

Mold shape is also a contributing factor in the situation. Although size does not come under shape it should be mentioned here that the larger the tire the more susceptible it is to shys, other factors being equal. One characteristic in mold shapes that appears to be the cause of shys is that section just above the bead, generally called the rim profile section. The more pronounced this rim profile, the more susceptible to shys the tires become because the tire in the uncured state at the rim profile section is not constructed exactly to the contour of the mold, but bridges the rim profile cavity when it is put in the mold. The internal air pressure during the cure is relied upon to shape the tire to the curve of the mold.

The tire rim profile section is very stiff, because all the lockups and chafing strips are there and consequently the shaping of the tire at this point is probably slower than at others. Most of the air at this point undoubtedly escapes through the bead registration or the sidewall vents if the mold is so constructed. Occasionally, however, some of it is sealed in and finally lodges in the offsets of the chafing and reinforcements strips located adjacent to or sometimes in the rim profile section of the mold often causing a shy. The number of shys on the outer edge of the tread design of various tires varies according to the type of design employed. The more semi-flat the tread design the more it seems to run shy unless venting is employed. Where shys cannot be eliminated by construction, lubrication or changes of workmanship, venting is generally available, but if vents are not properly placed their value is cut down. They obviously must be located where the air is trapping.

Workmanship is another factor in the shy situation. The matter of maintaining the proper gages of the various strips which go into the tire is important, as the air tends to trap along every offset of the tire. If the height of these offsets is increased, naturally the amount of air that can gather there is greater. When the tire builders are careless in stitching the plies around the bead, the result is a cumbersome bead. Thus when the rings are pressed on they have a tendency to roll the bead inward, drawing the tire tight around the bag and the chafing strips and the sidewalls are drawn down. At this section air traps and a shy sometimes results.

Undoubtedly the influence of stock is greater since the advent of highly accelerated curing. If the cure is accelerated and the "flow period" reduced there is naturally more danger of air trapping. In this regard the characteristics of the stock are, the character of its surface, and its plasticity under heat. A stock that has a rather dry surface or one that does not adhere to the mold during the early part of the cure is freer to yield better results than stock of the opposite nature. If the surface is tacky it adheres quickly to the mold when heat is applied and then traps whatever air has not escaped.

Since a non-adhesive surface is desirable an artificial means of producing it was tried. Tires were moistened with a 1 per cent solution of sulphur-chloride and gasoline. This gave a surface set to the stock and removed the tacky condition. The results were uniformly good inasfar as shys were concerned. Eromine and chlorine in carbon tetra-chloride solutions gave practically the same results. All attempts to meet surface dryness requirements compromises with the tire room's demands for fairly tacky stocks.

As regards plasticity under heat, some stocks absorb lubricants more readily than others, and there is considerable difference in the plasticities of various stocks while under heat just before they set. The absorption of a mineral powder is merely a sinking of its particles into the soft rubber mixture, assisted by the internal pressure. Where the stock becomes extremely plastic when heat is applied and the lubricant is quickly absorbed there is considerable danger of air marks because the lubricant does not remain long enough on the surface to allow the air to escape.

There are several conditions in the heater room which will at times cause shys and which are not necessarily the result of air trapping. The first of these is the manner of lubricating the tire. Obviously a proper amount of lubricant should be applied uniformly to the tire. Another point which should be emphasized is avoidance of moisture in the molds. Where a watery solution is being used for the more easy removal of the tire from the mold one should be certain that the mold is entirely dry before the tire is placed in it. When the soap solution is used upon the bead rings care must be taken to avoid applying an excessive amount or it is liable to get into the sidewall section of the tire and cause either discoloration or a shy. Many other things in the heater room may cause a shy such as steam leaks, sweating of the tire or the mold due to a drop in room temperature when the humidity is high, etc.

In general it can be said that cracked stock unions and discolorations frequently result from using a lubricant that is not being readily absorbed; that shys are generally a result of air trapping except where moisture in the mold occurs in the heater room. Air trapping is due generally to the construction of the tire, mold shape, workmanship on the tire, stock peculiarities, or heater room conditions; a lubricant merely alleviates the effect of these causes by assisting air escape from the mold; the best type of mineral lubricant appears to be one having fairly small sized particles of non-agglomerate tendency. The best result in molding a black tire is obtainable only when all factors involved in the situation are considered.

Preliminary Statistics of Dealers' Stocks of Automobile Tires

On October 1, 1927, the average stock of automobile casings per dealer was 55.9, according to preliminary statistics reported by 26,865 dealers. This is 6.0 tires per dealer greater than on October 1, 1926, and 2.3 greater than on October 1, 1924, but 0.7 less than on October 1, 1925.

Stocks of balloon casings average 29.8 per dealer reporting, an increase of 50 per cent over last year. Inner tubes held by dealers average 100.7, slightly higher than before reported on October 1. The following table shows average stocks per dealer on October 1, in 1927, 1926, 1925, and 1924.

AVERAGE STOCKS PER DEALER ON OCTOBER 1ST

	1927	1926	1925	1924
Total casings (including balloons)	55.9	49.9	56.6	53.6
Balloon casings (alone)	29.8	19.8	17.5	16.3
Inner tubes	100.7	93.8	99.1	79.9
Solid and cushion tires	26.5	23.9	25.0	*21.1

*Solid tires only

A comparison between the preliminary statistics for October 1, 1927, and the final statistics of October 1, 1926, is made in the following table.

DEALERS' STOCKS OF AUTOMOBILE TIRES

	October 1, 1927			October 1, 1926		
	Number	Dealers Reporting	Average per Dealer	Number	Dealers Reporting	Average per Dealer
Total casings (including balloons)	1,502,493	26,865	55.9	1,866,770	37,439	49.9
Balloon casings (alone)	563,459	18,929	29.8	483,896	24,454	19.8
Inner tubes	2,660,802	26,436	100.7	3,465,310	36,947	93.8
Solid and cushion tires	34,915	1,318	26.5	47,560	1,992	23.9

Special Circular No. 1662, Rubber Division, Department of Commerce.

What Is a Rubber Plantation Worth?

Some Essential Data and Important Points for American Investors to Consider Before They Become Plantation Stockholders

RUBBER plantations as investment propositions attract scant attention in the United States. In Europe quite the reverse is true. England alone has about a quarter of a million persons who own shares in British rubber plantation companies. Belgium and Holland likewise can point to a considerable number of their citizens as rubber shareholders. The indifference of the American public in foreign and especially tropical enterprises for investment purposes may be attributed perhaps to the general ignorance of vast numbers of our investing public and of most bankers in respect to the local conditions and other essential data of these far off countries. Until very recently domestic enterprises absorbed all our attention and money. But the United States has become, since the war, the depository of more than half of the world's gold. Our bankers are more and more forced to take note of foreign trade and investment opportunities. The time is not so far off when tropical Asia will not be so remote and so little known to American investors. Then rubber estate investments may become attractive. America is the chief consumer of rubber, taking about 80 per cent of the world's production. Several American companies are now growers of rubber. Perhaps more will follow in the future. It may prove helpful to give briefly some essential data to help one to evaluate rubber estates. These data have been published by authorities both here and abroad.

Budded Hevea Trees Planted in 1918 on the United States Rubber Co.'s Plantations in Sumatra

Distribution of Capital Investment

Plantation rubber represents a capital investment of about $900,000,000. Of this about 58 per cent is British, 15 per cent Dutch, 3 per cent French-Belgian and 3.7 per cent United States. Plantation rubber represented only 0.3 per cent of the world production of 59,000 tons in 1905. In 1924, of a world production of 414,703 tons, plantation rubber furnished 93 per cent. This is a phenomenal growth and shows the importance of the industry. The growth has been steady, and greatest in British Malaya where some 2.5 million acres of rubber are planted. The total acreage of planted rubber in the Middle East is estimated at 4,500,000 acres.

Cost of Planting

The cost of planting varies in different sections just as it varies in the case of planting peach orchards in New Jersey or Georgia. This cost is made up of many variables such as purchase price of land, nature of jungle growth to be cleared, type of laborer, investment in buildings and equipment, and many other items. It has been estimated roughly that the cost of actual planting would range between $200 and $400 per acre.

Earnings of Plantation Companies

The best investigation we have as a source of information on this subject reports an annual average profit of 26 per cent for the 14 year period 1905-1924. This 26 per cent was earned on the issued capital which averaged over rather than under the actual capital spent. Dividends averaging 22 per cent per year were paid, which represented an amount over three times the issued capital. These figures are based on the returns of some 52 representative companies and may be taken as a fair average of all the better European managed estates.

Stock Valuation

The investor wants to know what the stock of any company is worth as an investment. How can he calculate its value? In tropical investments one looks for a higher return in the form of dividends than from home industrials and utilities. This is so because the risks are greater. A reasonable return to expect from rubber estate investment may be placed at 10 to 15 per cent. The Middle East so far has proven that the usual dangers and difficulties of tropical investments,—plant diseases, "acts of God," labor disturbances, governmental upheavals—are negligible or under control. The Hevea rubber tree is a vigorous plant that readily adapts itself to wide ranges of growth conditions. New methods of cultivation and propagation are reducing the agricultural risks. The different factors to consider, then, to evaluate the shares may be listed as: (1) The yield per acre of mature areas. This reveals the agricultural qualities of the estate; (2) Cost of production per pound of rubber; (3) Market capitalization per planted area; (4) Working capital; (5) Management.

Some are inclined to regard factor (3) the basic factor for all calculations. This is not justified. For it does not follow that because stock is valued at $500 per acre it is cheaper than stock at $1,000 per acre. The first might be producing only 200 pounds of rubber to the acre (at a comparatively high cost) while the second is producing 500 pounds to the acre, which would be at a low cost. However, capitalization per planted acre is important and must always be taken into consideration with factors (1), (2), and (4).

For most cases, factors (1) and (2) are what determine the worth of an estate, from the agricultural point of view. If you want to know what the comparative value of a property is, the thing to do is to find out how many pounds of rubber it produces for each dollar of capital it employs. For example, consider an estate capitalized at $500 per acre and producing 500 pounds per

acre. It turns out one pound for every dollar of capital. If the profit is 10 cents per pound, the earning power is 10 per cent.

A simple formula to use in this:

$$\frac{\text{Standard production}}{\text{Acreage} \times \text{market price of stock per acre}} = A$$

(A) represents the pounds of rubber per dollar of capital.

The value of rubber estates cannot be considered fixed. Some of the better plantations are valued at well over $1,000 per acre. Some of the sterling companies—those registered in England with stock at £1 par—capable of producing rubber to sell at 20 cents per pound profit (a condition predicted by some for the period 1928 to 1930 at least) could write off to nothing their capitalization. This condition presupposes a high standard of production. Even a writing off of half the property account out of earned profits would assure a pretty good annual return to the investor. Today rubber is selling at 35 cents a pound. A company producing say 400 pounds per acre at an all-in cost of 18 to 20 cents would be making a profit of 15 to 17 cents per pound or say $64 per acre. On a market capitalization of $1,000 per acre this would equal 6.4 per cent.

A Basis of Cost Comparisons

The question has been raised as to the best basis to take in considering relative merits of costs between two estates. D. M. Figart suggests the "operating cost per acre" is a more reliable figure than "cost per pound." He explains that "cost per pound" varies with the yield per acre while "operating cost per acre" should be about the same regardless of the yield, provided that the estates under consideration have the same topography and labor conditions. At the present time a yield of at least 400 pounds per acre per year is expected from trees 10 years old. This standard production may be expected to continue for a good many years when management, soil and climatic conditions are favorable. What will happen in the future when the new methods of breeding superior trees yielding double this standard are adopted can be left to the imagination.

It is estimated that the average increase in the consumption of crude in the United States is 6 per cent. During 1927 the estimate of importations is around 600,000 tons; 1928, 613,000 tons, and for 1929 and 1930, the estimates are 617,000 and 621,000 tons respectively. Natural and economic forces at present unforseeable may upset all calculations. All business is subject to these same uncontrollable forces. Investors assume such risks.

More Detailed Consideration

For those who want a more scientific method of arriving at a valuation of an estate, the following may prove acceptable. The formulas are to be found in standard books on forest valuation. What follows has more bearing on valuation for purchasers of property than of stock. A standardized system of calculation must be agreed upon. There are four main variables, three of which (1), (2), and (3) will always be variable and (4) needs to be standardized. (The bracketed numerals refer to what follows).

To make any two estimates on any particular property strictly comparable, (2) and (3) should also be standardized for that particular property. The variables are: (1) Estimates of yields and cost of production; (2) estimates of price of the product and the profit per pound; (3) interest desired on the money expended; (4) method of calculating the value of the profits after (1), (2), and (3) have been given a value.

The following comments are directed to the above variables:

(1) This will vary always, since no two men will make the same estimate. However, where a strict system of accounting is practiced very precise figures will be available for past performances.

(2) This estimate should be fixed in most cases by the investors. A British delegation visiting the United States to explain restriction placed a value of 36 cents as a fair price. This value taken with (1) will give a value for "profit per pound."

(3) This value will be known to the investor. The thing to remember is that all agricultural enterprises are beyond human control and are subject to climatic factors, diseases and pests. It would not be too much to set the interest at 15 to 20 per cent.

(4) This factor is of greatest importance in any attempt to standardize the evaluation. The method adopted must be one which causes the values of the property to vary in correct rates with the following estimates: (a) Time required to bring area into full bearing (five years); (b) capital to be spent per acre to bring estate into full bearing; (c) time at which this money is to be expended; (d) profit on production per year until the estate is in full bearing (usually estimated at 12 to 15 years); (e) period of waiting necessary before profits will pay desired rate of interest; (f) profit on production per year when the estate is in full bearing; (g) age at which it is estimated trees have reached the limit of production (40 to 45 years?).

It will be noted that all these items are future estimates and not past expenditures. These considerations can be expressed in a formula which will express the total value of the property as equal to the sum of the value of the total planted area plus the value of the total unplanted area.

To construct the formula the above estimates will be represented as follows: Let

E = interest desired by the investor.

e = interest at which capital for development can be secured.

N = number of unplanted acres available for planting.

P_1, P_2, P_3, P_4, P_5, P_6, P_7, P_8, P_9 = estimated net profits from total planted area for 1st, 2nd, 3d, 4th, 5th, 6th, 7th, 8th, and 9th years of profits respectively.

P_{10} = estimated annual net profits which start on the 10th year of profits (when plantation is supposed to come to full bearing with the trees at 15 years old) and continues through the economic life of the trees.

X_1, X_2, X_3, X_4.....X_9 = estimates of net profits from one acre during the 1st to the 9th year of profits respectively.

X_{10} = estimated annual net profits from one acre which start on the 10th year of profits and continue through economic life of the trees.

C_1, C_2, C_3, C_4, and C_5 = excess of estimated expenditures over the estimated incomes for the first 5 years respectively. At the end of this time income is estimated to exceed expenditure.

Now, grouping these symbols into formulas we have,

The value of planted area is equal to the sum as expressed by:

$$\frac{P_1}{(1+E)} + \frac{P_2}{(1+E)^2} + \frac{P_3}{(1+E)^3} + \frac{P_4}{(1+E)^4} + \frac{P_5}{(1+E)^5} + \frac{P_6}{(1+E)^6} + \frac{P_7}{(1+E)^7} + \frac{P_8}{(1+E)^8} + \frac{P_9}{(1+E)^9} + \frac{P_{10}\,[(1+E)^{30}-1]}{E\,[1+E]^{39}}$$

(Here 30 represents economic life of tree after it reaches its full maturity at 15 years old and 39 = number of years in which to expect profits.)

The value of *one* unplanted acre equals the difference between the following bracketed sums, as:

$$\left[\frac{X_1}{(1+E)} + \frac{X_2}{(1+E)^2} + \frac{X_3}{(1+E)^3} + \frac{X_4}{(1+E)^4} + \text{.....} \frac{X_9}{(1+E)^9} + \frac{X_{10}\,[(1+E)^{30}-1]}{E\,(1+E)^{44}}\right] \text{minus}$$

$$[C_1(1+e)^9 + C_2(1+e)^8 + C_3(1+e)^7 + C_4(1+e)^6 + C_5(1+e)^5]$$

Then the value of the *total unplanted* area is equal to the product of N multiplied into the value of the unplanted acre.

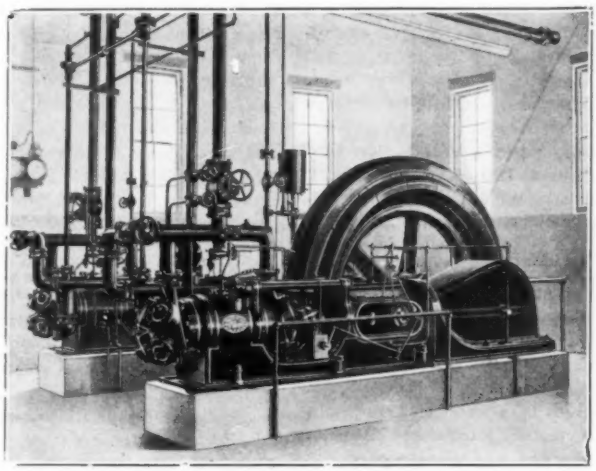
These formulas look dreadfully hard and so mathematical. However, they are very simple to work out and especially if you have access to tables which give the higher powers of numbers. It is always better to know than to guess. Where we can use a method of estimating that brings us nearer the true value, we should not hesitate to use it even if it implies some extra work.

Refrigeration in Rubber Working

Refrigeration of mill and calender cooling water controls roll temperatures independently of seasonal conditions and also economizes water supply

AN ample supply of cold water unaffected by seasonal temperatures is a recognized necessity for the satisfactory operation of mixing mills, calenders, etc., in rubber plants. An effective system for refrigerating mill cooling water is not only a most dependable method for maintaining control of cooling water temperature but for economizing the water supply as well.

In the formulation of plans for cooling water, several preliminary factors should be considered. For instance, if the factory is located adjacent to an abundant supply of relatively cool water, it is good engineering to cool the water a few degrees by means of a refrigerating plant and then apply the water for other purposes in the plant or run the water in the sewer. If, however, the temperature of the water is at 85 degrees F., and the water is to be cooled to 55 degrees F., recirculation of the water is to be preferred because under usual conditions the temperature rise of the water coming from the rolls is usually only 6 or 8 degrees, therefore, it will be necessary to reduce the water only 6 or 8 degrees instead of continually reducing new supply of water from 85 degrees. This results in an enormous saving in refrigeration and is to be preferred when the initial temperature of the water is relatively high.



Double Acting Duplex Ammonia Compressor

The refrigerating machinery does not affect the water in any way except changing its temperature so there is no wastage of water due to contamination. The cooling is easily effected and the plant for this purpose consists of an ice machine and a water cooling device. The ice machine consists of an ammonia compressor, an ammonia condenser, an ammonia liquid receiver and the miscellaneous connections between these various pieces of apparatus.

After the ammonia gas has been compressed, it is forced into a condenser over which cooling water is made to flow with the result that heat is removed from the ammonia gas and at the pressure in the condenser and the temperature created by the passage of the water, the ammonia gas condenses into liquid ammonia, drains away to a liquid receiver from where it is ready to go into the water cooler to repeat the cycle of operation.

The water cooler is usually built of 2-inch outside galvanized steel pipe in coils 20 feet long and of varying number of pipes high. Coils are mounted by means of cast iron stands on piers preferably of concrete in a concrete basin. Water troughs are supported by leveling brackets on top of the coils and a water distributing arrangement provided so that the troughs are flooded with the water to be cooled. The water flows out of the troughs through small side notches and drips down onto the coils, striking the top pipe in the center. Water will cling to steel pipe and find its way around to the center of the bottom of the pipe, where it will then drip off to the pipe below and on to the water collecting basin in which the water cooling coils are installed.

Ammonia is introduced into the coils through an arrangement of expansion valves and traps so that water cooling coils are literally flooded on the inside with liquid ammonia. The pressure of the ammonia in these coils is about 45 pounds gage pressure and at this pressure, ammonia has the property of boiling or evaporating into a gas at a temperature of about 26 degrees F. In order that the ammonia may evaporate or boil, it must absorb heat and as the water is about 66 degrees as it starts to flow over the coils, the ammonia readily absorbs the heat it requires to evaporate from the water and the water is cooled from 66 degrees F. to 58 degrees F. or thereabouts in dripping down over the surface of the pipes. After the ammonia has turned into gas, the heat which it absorbed from the water must be removed before the gas can be condensed again into the liquid form. This is accomplished by raising the pressure of the gas in the ammonia compressors and cooling the gas in the ammonia condensers. It is thus apparent that the so-called ice machine is a contrivance for transferring heat from one part of a plant to another.

The application of refrigeration to various industries is in some respects quite recent and, therefore, those who are interested will do well to confer with refrigerating engineers experienced in the building of refrigerating plants. These engineers are fully conversant with all the factors entering into the success of a plant such as the proper design of all parts of the equipment and the correct calculations for the necessary sizes of each part of the plant, in order that the machines will be enabled to deliver the correct amount of refrigeration. The water coolers must be of the proper size to balance the ammonia compressors and all factors regarding the fluctuation in the temperatures of the cooling water supply must receive proper attention. These items are most important and cannot be emphasized too strongly.

The illustration and information contained in this article were supplied by the Vilter Manufacturing Co., Milwaukee, Wisconsin.

ACCIDENT COURSE FOR NEW YORK UNIVERSITY

A course in the prevention of accidents will become a part of the curriculum of New York University, according to an announcement made by Arthur Williams, president of the American Museum of Safety, which is cooperating with the university in presenting this course.

A study of the deaths and injuries during 1926, which reached the alarming proportions of 85,449 lives, 2,000,000 accidents, with a loss of more than one billion dollars, shows that not more than 10 per cent could have been prevented by additional mechanical guards or equipment, thus placing the blame on the human factor. As it is thought that at least 75 per cent of all accidents could be prevented, it can readily be seen that a continuous and organized educational effort to make people think about avoiding accidents is a pressing need.

The Engineer's Opportunity[1]

The following paper, slightly condensed, states the important relation that the engineering staff bears to safety of plant operation and shows the need of special safety inspectors for insuring thorough service at all times:

The term "engineer" today is somewhat broad and to indicate the field of work the term must be qualified. We have in the rubber industry all classes of engineers, including designing engineers, development engineers, safety engineers, plant engineers, etc. Each of these plays a contributing part in advancing safety.

The designing engineer in drafting a machine should include in the design safety guards properly placed and arranged that they will not interfere with production and may be easily removed for overhauling the machine. Even today in some cases safeguarding is an afterthought and after two decades of propaganda there is considerable chance for improvement.

However, as illustrations of the advance in safety, one should mention the design of safety treads for stairs, the various safety locks on elevators, the use of safety trip bars on mills and calenders, all of which are a development of recent times.

The development engineer in the invention of new and untried processes and equipment should consider carefully whether or not there is being introduced hazardous conditions with which he is not familiar, and should guard against them and not wait for sad experience.

The safety engineer, or supervisor, a product of the last few decades, has not yet come into his own. Often he is limited in his work by not knowing what is being done until it is done. In this respect a closer cooperation between the various engineering branches of an organization would benefit all. In fact, every engineer should be a safety engineer.

The plant engineer, superintendent of engineering, master mechanic, or man in actual charge of the mechanical operation of the plant, is the man who, if he will, can play a large part in the program of safety. Most accidents are physical not mental. It is true that a great many accidents can be prevented by education, but modern inventions and developments have introduced conditions which still more than in the past require the attention of the plant engineer. A few of these are pulverized fuel with its attendant explosive hazard, high tension electric current with the necessity of proper insulation, high pressure steam boilers with their greater need for watchfulness, the use of various new ingredients in compounding and the necessity for better ventilation, and so on through a long list.

How is the engineer to safeguard the constantly appearing new conditions? Each condition should be studied by itself. Sometimes the mechanical fails, sometimes the human fails. On railroads accidents have occurred by the locomotive engineer not seeing signals, due to various reasons, and running by the signal set against him. In this case the human fails. To overcome this and similar accidents various systems of train control have been developed and are being installed at the present time so that if the human fails the mechanical would safeguard, thereby reversing the age-old adage of "the power of mind over matter," and showing the superiority of matter over mind in a specific case.

Inspection is the one measure that has done the most to prevent accidents. It is true that we have a great many inspectors now, boiler inspectors, building inspectors, fire insurance inspectors, etc., but do we have competent safety inspectors of our manufacturing equipment?

It may be true that it is more difficult to inspect for safety on special manufacturing equipment than it is on common standard equipment, but such things as belts running so that they jump off the pulley, gear teeth becoming so badly worn that there is possibility of topping, the links on chain hoists becoming worn so that there is a possibility of breakage, and so on are generally inspected very casually; if at all, by some mechanic. Would it not pay, from a safety and financial standpoint, to employ a thoroughly competent and experienced safety inspector who would inspect regularly and thoroughly and be a safety inspector actually as well as in name?

[1] By J. E. Congdon, chairman Engineering Committee N. S. C., U. S. Rubber Co., New Haven, Connecticut, and read before the Rubber Section of the National Safety Council, Chicago, Illinois, September 28, 1927.

Factice in Tubes and Footwear

In revising his mixing formulas the rubber compounder may well consider the advantages offered by the use of factice or rubber substitutes, particularly from the point of view of reducing volume costs while retaining good working and aging qualities. Factice holds a distinct and important place among rubber compounding ingredients. It is, in fact, not rubber substitute but material which exerts certain definite effects in rubber mixings both chemically and physically. Brown factice does not interfere with the functioning of accelerators but white factice retards the action of nearly all of them, however. This effect can be overcome by increasing the proportion of accelerator.

The proper grade of factice for a given class of compounding and its correct application is important. Some compounds can be ruined by the improper use of these materials, while in many cases compounds can be improved by using the proper factice correctly. The factice is milled into the rubber at the start of the mixing operation. It generally will adhere to the back or fast roll at the start, but readily comes off and blends perfectly with the crude rubber and actually reduces the milling time of the rubber.

For example, a high grade compound automobile inner tube, mainly pure gum, is compared below with one in which factice has replaced some of the rubber.

Standard Tube		Substitute Tube	
Crude rubber	90	Crude rubber	85
Fillers and curing agents	10	Hard brown factice	5
		Fillers and curing agents	10
	100		100

This factice compound cures in the same time as the standard compound and without change in the curing agents. The tensile is slightly decreased and the elongation is a little higher, but the tube ages perfectly. A saving in volume cost is evident and worth while. Similar substitutions may be made in other high rubber content stocks, such as water bottles, frictions, etc., without detriment to the good qualities of the compound.

Boot and shoe stocks readily take up appreciable amounts of factice, and are without doubt improved if properly compounded. As an illustration, a standard boot upper compound as made today would be as follows:

Standard Upper		Factice Upper	
Crude rubber	50	Crude rubber	42
Reclaim	10	Medium brown factice	8
Fillers and curing agents	40	Reclaim	10
		Fillers and curing agents	40
	100		100

Twenty years ago in the days of African and Central rubbers, this class of compound could not have been successfully handled. With present-day Paras and plantations, which all contain hard resins, this factice compound works admirably. It reduces the number of cracked vamps and helps the volume cost aspect. Nearly the same applies to shoe frictions and inside compounds, but factice is not so successful in solings unless they are cured under pressure.

In proofing and clothing of all kinds factice has been used for years, and the good results of the past only tend to increase their consumption at the present time. Clothing compounds carrying 25 per cent of crude rubber will generally take an equal amount of factice. Both brown and white factice are used, the white in the lighter colored coatings. Tubings will take upwards of 10 per cent, depending on the grade of goods in the making. Factice will also be found a useful mechanical softener in the tubing operation. White sheetings will carry 30 per cent of a good white factice either in the heated or acid cured product. Thus it is evident that the so-called substitutes are a factor in present-day compounding which cannot be overlooked.

Chemical Exposition

THE Eleventh Exposition of the Chemical Industries was held September 26 to October 1, 1927, in Grand Central Palace, New York, N. Y., where probably the greatest collection of the various chemical and allied industries in the history of this exposition was assembled. The United States Government's exhibits were probably the finest ever sent any exposition and contained notably valuable data in its various sections. It is interesting to note that the total registered attendance was about 16,000 and that the total number of visitors during the week was above 75,000. This is an indication and tangible proof that industry realizes the value and the power of chemistry in every field and phase today.

The next exposition will be held at the Grand Central Palace, New York, during the week of May 6, 1929, and it is expected that many of the technical societies in the field will take advantage of the opportunity to hold meetings at the same period.

The National Safety Council, Chicago, Illinois, presented in complete form the recently concluded exhaustive study of benzol and the toxicity of this solvent where used in products designed for manufacturing and domestic use.

The following exhibits were of particular interest to the rubber industry:

The General Electric Co., Schenectady, New York, exhibited an atomic hydrogen machine, a new x-ray diffraction apparatus, samples of a complete line of fan cooled motors and a display of fused quartz and special laboratory products. The importance of x-ray diffraction analysis is apparent in the fact that nearly all solids are in a crystalline state. With few exceptions their properties depend upon the kind and arrangement of atoms and molecules within the crystals.

The Bristol Co., Waterbury, Connecticut, displayed a comprehensive selection of gages for recording pressure, vaccum, liquid levels, etc., and recording thermometers, psychrometers, electric pyrometers, ammeters, etc., temperature and pressure controllers, long distance transmitting system and other precision instruments for use in chemical industries and general manufacturing processes.

H. H. Robertson Co., Pittsburgh, Pennsylvania, exhibited asbestos protected corrugated metal siding and roofing, skylights and sashes. These structural materials insure permanent protection against deterioration by weather or corrosive influences from the interior of the structure as in the case of manufacturing plants where chemical processes are utilized. The Robertson company also showed a model ventilation system which clearly demonstrated the constant efficiency of this special design of natural draft ventilator in comparison with the usual roof monitor with louvers. The Robertson ventilator operates effectively on either flat or pitched roofs for in whatever direction the wind may strike the ventilator it results in producing pronounced reduction of pressure or vaccum within the ventilator inducing a strong outward draft.

The De Laval Steam Turbine Co., Trenton, New Jersey, exhibited a worm gear speed reducer for rubber machinery, which requires no attention beyond keeping the oil well filled.

J. P. Devine Co., Buffalo, New York, featured engineering service and special machinery for vacuum drying, impregnation, solvent recovery, etc.

The United States Rubber Co., New York, N. Y., chiefly exhibited hard rubber piping, fitting and utensils, also hard rubber sheets, rods and tubing for machining. This company specializes in rubber lined drums, tanks and tank cars for handling acids and corrosive liquids generally.

American Hard Rubber Co., New York, N. Y., exhibited Ace hard rubber lined and covered tanks and barrels for chemical processes, dye establishments, electro plating, etc. For the latter purpose large steel tumblers of rectangular cross section are covered and lined with hard rubber and provided with driving gear of the same stock. The company also showed a full line of pipes, fittings and utensils, vertical, horizontal and centrifugal hard rubber pumps.

Buffalo Foundry & Machine Co., Buffalo, New York, showed full size drying apparatus of several types for chemical products. These were a hot air rotary drier, vacuum pan drier, automatic double drum drier and inclined rapid circulation evaporator.

The Westinghouse Electric & Manufacturing Co., Pittsburgh, Pennsylvania, displayed photo glow tubes, grid glow tubes, motor starting and safety switches.

The U. S. Bureau of Standards exhibit included a rubber substitute for gutta percha as an insulating material for submarine use. This product is the outcome of researches begun three years ago and still in progress in order to provide for a military cable between Seattle, Washington, and Sitka, Alaska. Gutta percha being practically unavailable for domestic submarine cable manufacture, it became necessary to produce a rubber compound to take its place and be free from the faults of the rubber and its permeability to water under deep sea pressures.

Tire Fabric Production*

The following statistics show that from 1921-1925 *the South has taken a large share of tire fabric production from the New England states, the former showing a* 230.1 *per cent increase in pounds and a* 94.4 *per cent increase in value, against the latter's increase of* 26.3 *per cent in pounds and* 30.5 *per cent decrease in value.*

Class and State	Quantity						Value		
	1925		1923		1921				
	Pounds	Sq. Yds.	Pounds	Sq. Yds.	Pounds	Sq. Yds.	1925 Dollars	1923 Dollars	1921 Dollars
Tire fabrics	189,345,195	242,126,459	163,686,944	**226,555,107**	96,247,279	95,656,536	105,625,894	106,079,633	101,652,434
Duck	32,081,733	40,761,508	63,858,718	88,258,927	56,056,431	51,722,845	16,628,610	42,324,027	57,738,475
Georgia	12,822,770	15,776,838	5,468,571	7,656,161	13,812,340	12,992,271	5,880,108	3,118,056	11,672,505
Massachusetts	3,173,521	3,796,113	18,280,763	17,921,361	11,208,272	11,059,044	1,859,146	12,718,757	10,041,109
North Carolina	8,356,220	11,906,996	(2)	(2)	(2)	(2)	4,450,517	(2)	(2)
All other States	7,729,222	9,281,561	40,109,384	42,681,405	31,035,819	27,671,530	4,438,839	26,487,214	36,024,861
Cord fabrics for tires	140,492,454	176,964,466	60,269,377	100,727,166			80,478,625	39,631,780	
Massachusetts	35,734,110	41,417,980	23,781,942	28,019,743			19,601,675	16,840,725	
North Carolina	17,095,658	24,822,855	(2)	(2)			9,967,845	(2)	
Rhode Island	12,840,451	16,375,338	11,696,637	15,178,951	40,190,848	43,938,691	8,889,545	7,347,184	43,913,959
All other States	74,822,235	94,348,293	24,790,798	57,528,472			42,019,560	15,443,871	
Tire fabrics other than duck and cord	16,771,008	24,400,485	39,558,849	57,569,014			8,518,659	24,123,826	

* *Figures taken from the Census of Manufactures:* 1925, *Cotton Manufactures Division*

EDITORIALS

Reasons for American Prosperity

AMERICAN domestic trade stability is attested, the National Industrial Conference Board observes, by the fact that only trivial variations have occurred during the past two years in employment, wage rates, and earnings; and the recent stiffening in most commodity prices is taken as a good index of early increase in demand for rubber and various other products. In other words, it gives assurance of continued good health in the nation's business.

Foreign observers marvel at America's good fortune, and attribute it to almost everything but the right causes. They can not understand especially how this country still remains by long odds the chief market for its immensely increased production. Yet the explanation is simple: Technical improvements unsparingly applied, constantly augmented managerial and worker efficiency, and notably the greatly increased use of mechanical power to swell output at lower cost. In 1925, for instance, there was 32 per cent more installed power back of every operative than in 1914, and this played no small part in not only increasing production but in offsetting the mounting wage level during a period of declining prices, an experience in which the rubber industry shared even though its annual output had increased 397 per cent.

Americans have merely been quicker than most overseas rivals in applying the teaching of modern industrial philosophy that a nation of good purchasers can not be made if workers be underpaid; as they have also conspicuously proved that successful industries are those which pick the best men, reward them generously, use the most scientific processes, utilize the choicest materials, and keep their mechanical equipment in the highest state of productivity.

Justifying Hand-to-Mouth Buying

DESPITE the direful predictions made half a dozen years ago when the trend of hand-to-mouth or requirement buying was first discussed, that policy is being so widely adopted and its merits so generally realized that industrial leaders believe that it will become permanent. In the opinion of some, the old policy of stocking up with raw material a long way ahead is as obsolete as the canvas tire. Some large rubber manufacturing concerns still maintain a five-months' position on cotton, for instance, but they do not care to take a chance on much more than three months on rubber. Rather would they risk a small stock on an adverse market than be caught holding a large inventory that might also be deteriorating.

True, the cost of raw materials may advance, and regret be expressed that a large quantity had not been bought at the lower price range; but, on the other hand, the hazard is less in buying only as needed, for even if material cost should rise such expense may be added to the product price. Manufacturers find much satisfaction in the fact that while the volume of output during the past year has been large, never has so little unsold merchandise accumulated. At the same time employment has remained high and net returns excellent and well sustained. Requirement buying may to a degree militate against mass production, but, like a balance wheel, it serves as an effective regulator of quantity production and checks extreme swings.

To hand-to-mouth buying is now attributed much of the soundness of the nation's economic position. Credits were never so liquid, price fluctuations less feared, order cancellations so few; in fact business is on a more even keel and it would take almost a calamity to rock the boat. Even though it may in some cases cost more to adjust factory equipment to smaller though oft-repeated orders than the less frequent large ones, and that distributing expense might sometimes be increased; on the other hand, there is so much less tie-up of capital in raw materials, so much less cost for warehousing crude stock and finished goods, so much reduction in waste, so much higher turn-over, and now so little trouble in getting prompt delivery of supplies that the compensations are deemed to well outweigh the disadvantages. However, it is in keeping productive and distributive organizations nearer the ultimate market and in closer touch with actual needs of purchasers that this trade stabilizing factor really exerts its most beneficent influence.

Rewards for Useful Ideas

ONE of the most progressive rubber factories in the country attributes much of its material success and its exceptional freedom from labor worries to the fact that it never fails to appreciate even the smallest endeavors of operatives to improve manufacturing conditions. Some of the greatest time and material saving features introduced have been suggested by observant men in the rank and file. Promotion is the preferred reward, but where this may not be made the helpful idea brings a bonus, a minor suggestion winning at least $5, while a major one may bring $500. While bestowing rewards for new shop ideas is not a novelty, certainly it is a practice that deserves more general adoption.

* * *

RUBBER TO ROUT RIOTERS. TO SATISFY SURGEONS AND sentimentalists, Vienna police will scrap wooden clubs for rubber truncheons. Fewer cracked heads and more plantation crude. Soon the R. G. A. may show how a great city's rubber billies can beat locust bludgeons in laying low the lawless with mercy, neatness, and dispatch.

American Rubber Technologists

¶Technical superintendents, process and development engineers in rubber manufacturing and reclaiming plants, research, testing and service laboratories are invited to send their biographical data to us for publication

GEORGE D. KRATZ, chem. *b.* Jan. 9, 1899, Akron, O., B. Chem., Cornell U., 1912; Diamond Rubber Co., Akron, O., 1912-1914; Norwalk T. & R. Co., Norwalk, Conn., 1914-1917; Falls Rubber Co., Cuyahoga Falls, O., since 1917. *Author*: Five patents on tire construction and design. Numerous papers on action of accelerators, vulcanization and determination of sulphur in rubber. *Member*: University Club, Akron; Cornell Club, N. Y. City; Old Colony Club; Lions; Am. Chem. Soc.; New Jersey Chem. Soc. *Address:* The Falls Rubber Co., Cuyahoga Falls, O., and 641 E. Buchtel avenue, Akron, O.

Herman R. Thies, chem. *b.* Sept. 27, 1895, Peck, Kan. A. B., Phillips U., 1917; M. S. U. of Chicago, 1920; lieutenant heavy artillery U. S. A., 1917-1919; factory control chem., 1920-1922, director testing lab., 1922-1926, asst. to director of research since 1926, all with Miller Rubber Co., Akron, O. *Member*: Delta Phi Sigma, Am. Chem. Soc., Torch club. *Address*: Miller Rubber Co., Akron, O.

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Harold B. Underwood, chem. *b.* June 16, 1884, Johnstown, N. Y. M. E. Cornell U., 1907; asst. chem., B. F. Goodrich Co., Akron, O., 1908-1912; chem., Star Rubber Co., Akron, O., 1912-1913; chf. chem., Racine Rubber Co., Racine, Wis., 1913-1916; chf. chem., Ajax Rubber Co., Racine Div., Racine, Wis., since 1916. *Member*: Am. Chem. Soc., Akron University Club, Racine Rotary Club, Masons. *Address*: 1414 Wisconsin street, Racine, Wis.

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John Young, chem. *b.* June 12, 1886, Scotland, A. R. T. C., Royal Tech. Coll., Glasgow, Scotland, 1909; F. I. C. Inst. of Chem., Gr. Britain and Ireland, 1909; chem., Thos. de la Rue & Co., London, 1909-1910; chem., The Demerara Co., Ltd., Georgetown, British Guiana, 1910-1911; research chem., B. F. Goodrich Co., Akron, O., 1911-1916; chf. chem., Firestone T. & R. Co., Akron, O., 1916-1920; mgr. Intermediates Dept., National Aniline & Chem. Co., New York, N. Y., 1921-1927; pres. and genl. mgr. Pioneer Asphalt Co., Lawrenceville, Ind.; vice pres. in charge of rubber division. Wishnick-Tumpeer, Inc., 1927. *Author*: papers, with D. Spence, on vulcanization of rubber, also patents on reclaiming and vulcanization accelerators. *Member*: Am. Chem. Soc., Inst. of Chem., Soc. Chem. Indus., Akron U. Club, Montclair Athletic Club, Lawrenceville Country Club, Masons. *Address*: 251 Front street, New York, N. Y.

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James Thomas Brand, chem. *b.* Mar. 7, 1887, Newton, Mass; Newton High School, Newton, N. J; compounding chem. Manhattan Rubber Mfg. Co., Passaic, N. J., 1913-1921; tech. supt., United & Globe Rubber Co., Trenton, N. J., 1921-1925; compounding chem., Manhattan Rubber Mfg. Co., Passaic, N. J., since 1925. *Address*: 66 Howe ave., Passaic, N. J.

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Charles R. Park, chem. *b.* Aug. 31, 1893, Tiffin, O., A. B., Cornell U., 1916; instructor genl. chem. U. of Minn., 1916-1917; instructor genl. chem. and phys. chem., M. I. T., Cambridge, Mass., 1917-1922; compounding and research chem., Goodyear T. & R. Co., Los Angeles, Calif., since 1923. Also acting chf. chem., Delano Land Co., Los Angeles, Calif. *Member:* Am. Chem. Soc., Inst. Rubber Indus. (Eng.), Alpha Chi Sigma, Gamma Alpha, Masons. *Address*: 2312 E. 52nd street, Los Angeles, Calif.

Jacob Kirschner, chem. *b.* Aug. 11, 1888, Wilamowice, Austria. Realschule and Hoehere Staats-Gewerbeschule, Bielitz, Silesia; analytical chem. of Oesterreich-Amerikanische Gummiwaren - Fabrik., Prag, Czechoslovakia, 1911-1913; asst. chem., 1915-1917; chf. chem. in charge of laboratory and experimental dept., Dryden Rubber Co., Chicago, Ill., since 1918. *Member*: Am. Chem. Soc., Chemists Club, Chicago, Ill., Masons. *Address*: 1014 So. Kildare ave., Chicago, Ill.

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William Fraser Russell, chem. *b.* July 16, 1887, Glasgow, Scotland; asso. in chem. Royal Tech. Coll., Glasgow, 1908; asso., inst. of chem. of Gt. Britain and Ireland, 1908; Ph. D. chem. U. of Jena, Thüringen, Germany, 1910; research chem., B. F. Goodrich Co., Akron, O., 1913-1914; chf. chem., Norwalk T. & R. Co., Norwalk, Conn., since 1914. *Author*: rubber papers and patents on accelerators, improvements in rubber vulcanization and means of overcoming variability of raw rubber. *Member*: Am. Chem. Soc., Inst. of Rubber Indus. (Eng.), Inst. of Chem. Gt. Britain and Ireland, Norwalk Country Club. *Address*: 6 Brush street, Norwalk, Conn.

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Thomas L. Belcher, chem. *b.* 1886, Winthrop, Mass.; B. S. Dartmouth Coll., 1910; Alex. Hamilton business course; chem., Revere Rubber Co., Chelsea, Mass., 1910-1915; chem., N. Y. Belting & Packing Co., Passaic, N. J., 1915-1918; chem., Manhattan Rubber Mfg. Co., Passaic, N. J., since 1918. *Member*: Am. Chem. Soc., A. I. C. *Address*: 112 Woodland ave., Ridgewood, N. J.

Frank S. Malm, engr. *b.* June 14, 1885; special student, Lewis Inst. 1916-1920; methods and development work, Western Electric Co., Inc., Chicago, Ill., since 1906. *Member:* Masons Am. Chem. Soc. *Address*: 4201 West 21st place, Chicago, Ill.

What the Rubber Chemists Are Doing

Dispersive Effect of Reclaim in Compounding

THE paper entitled "Specifications for Rubber Goods and the Value of Performance Tests" by J. M. Bierer and C. C. Davis[1] discussed very effectively the subject of American specifications and tests for railway hose, etc. The economic importance of the conditions reported has given rise to renewed study of rubber goods on the part of the specifications committee of the American Railway Association. However, the real value of the paper for rubber chemists and technologists is contained in the section on reclaimed rubber wherein reference is made to the dispersive effect of the acetone extract of tire reclaim upon rubber compounding ingredients especially zinc oxide and carbon black.

This discovery is a matter of scientific interest and great industrial importance. The experimental method described affords a rapid qualitative method for differentiating softeners in the selection of those most useful in compounding for maximum reinforcement of a stock designed for high resistance to abrasive wear, etc. The section referred to reads as follows:

Reclaimed Rubber

Nearly all specifications dealing with the highest quality of rubber goods prohibit the use of reclaimed rubber. This unnecessary restriction means so much from an economic point of view that it deserves special comment. At one time it was generally thought that reclaimed rubber, though very useful in cheap rubber compounds, was disastrous in high grade ones, and that when the latter contained even a small proportion of reclaimed rubber they were poorer than similar compounds containing none. It has, however, been proved in recent years by rubber technologists that the judicious use of reclaimed rubber in high grade compounds does not impair the quality, and the writers have recently published quantitative data (*Ind. Eng. Chem.*, 1926, 18, 348; *India Rubber J.*, 1926, 71, 565) to show that the use of reclaimed rubber allows the production of rubber products which are of as good quality and which age as well as similar compounds containing only new rubber, and at times are of better quality than those containing no reclaimed rubber. These laboratory tests of tire tread compounds have since been confirmed by road tests, so that there is no longer any doubt of the advantage of reclaimed rubber.

Reclaimed rubber was not used in increased quantities during the past two years in retaliation for the high price of rubber, but because the unusual price of rubber awoke the more backward manufacturers to the advantages of reclaimed rubber. Tires in America are running farther than ever before, and the fact that they contain reclaimed rubber means that the latter has become established as a beneficial ingredient in rubber compounds subjected to the most severe wear. It is not to be expected that the same quality will be maintained if part of the new rubber is replaced by the same weight of reclaimed rubber. On the other hand partial replacement of new rubber by a larger amount of reclaimed rubber, with proper alterations of the other ingredients, does not impair the quality for many uses. Of course the quality of reclaimed rubber governs the amount which may be used but in compounds such as tire treads the resistance to abrasion is not impaired when as high as ten per cent of new rubber is replaced by the proper amount of reclaimed rubber.

This fact becomes of profound significance in its relation to the rubber market, for by using sufficient reclaimed rubber, the supply of new rubber is conserved and its price thereby maintained at a reasonable figure. Let it be emphasized that fluctuations in the price of rubber are of no advantage to the plantations, to the manufacturer of rubber goods, or to the consumer. The question is therefore no longer whether reclaimed rubber is a desirable ingredient in tires and other products, but why it is beneficial, why it may even increase the resistance to abrasion.

One explanation of this increase may be illustrated by analogy. A paste of zinc oxide or other pigment is made with kerosene, turpentine, xylene, or other suitable liquid, so that the paste can be kneaded without either flowing or crumbling. A very small proportion (2 per cent. by weight of the zinc oxide) of acetone extract of reclaimed rubber is added to the paste, whereupon by rubbing the latter immediately becomes thin enough to pour.

It is possible that there are substances in reclaimed rubber which have a very powerful dispersing action in this way and therefore the addition of reclaimed rubber to a high grade compound wets the pigments better, increases their dispersion and thus improves the quality of the compound.

Each powder requires a different amount of liquid to make a paste but an indication may be had by the fact that 10 g. of zinc oxide, carbon black, whiting, barytes and china clay require in the neighborhood of 10, 25, 6, 2, and 10 c.c. respectively of kerosene to make a suitable paste.

A zinc oxide-kerosene paste may also be "liquified" by similar small amounts of the acetone extract of raw rubber, degras, palm oil, oleic acid, stearic acid, rosin, pine tar, liquid asphalt, "Agerite," "V.G.B." and numerous other agents. A particularly large number of agents "liquefy" zinc oxide pastes, but pastes of other materials, particularly carbon black, are much less readily "liquefied."

Degras and especially the accelerator "Trimene" have a thinning action on a carbon black-kerosene paste, while one of the most striking cases is the "liquefaction" of a carbon black-water paste by sodium oleate, a carbon black-water (2:5) paste being "liquefied" by 8 per cent sodium oleate on the weight of carbon black.

Proportions

There is a minimum proportion of thinning agent to pigment below which "liquefaction" does not take place. This minimum varies with each combination, and is for example only about 0.3 per cent with stearic acid or oleic acid by weight of zinc oxide. This minimum is, moreover, practically independent of the particular liquid and its proportion used in making the paste. It is possible by a suitable thinning agent to "liquefy" pastes of any of the ordinary rubber compounding ingredients such as carbon black, zinc oxide, whiting, clay, lithopone, slate, barytes, magnesium carbonate, lime, litharge, red iron oxide, etc.

Our reason for dealing at such length with the subject of reclaimed rubber is because of its importance in connection with specifications. There are many rubber compounds, in fact, nearly all those used in specification goods, where the desired quality can be obtained either by new rubber alone or by a mixture of new and reclaimed rubber. Specifications which prohibit reclaimed rubber of any kind under any conditions make impossible the production of specification goods in the most economical manner. Since rubber goods containing reclaimed rubber will meet all service conditions in just as satisfactory a manner as goods containing a new rubber alone, and at a lower cost, it is indeed unfortunate that large consumers, such as the United States Government, fail to recognize the proper place of reclaimed rubber in specification goods.

[1] *Trans. Inst. Rubber Ind.*, August, 1927, pp. 151-184.

Compounding Materials Used in the Rubber Industry, Their Classification and Health Hazards[1]

L. J. HEALY[2]

The Health Hazards Committee of the National Safety Council is engaged in the task of providing authentic data on the hazards and proper handling of compounding ingredients used in the rubber industry. The development of safety work to guard the health and lives of the nation's workmen is bringing to light the less familiar types of hazards. The more obscure any hazard, the more insidious and dangerous it is, especially if it be of a type to slowly affect one's health. Many substances are in use which neither the manufacturer nor employee recognizes as being dangerous. These are to be feared inasmuch as contact with or improper handling of them may cause a slow breaking down of the body structure which cannot be corrected if allowed to continue for too long a period.

The rubber industry is one in which a great many and varied types of compounds are used. Some manufacturers are apparently ignorant about the properties, toxic or otherwise, of many of the substances they are using. With this increasing use of organic substances for vulcanizing rubber there is an ever present danger of health hazard unless the toxic and irritating properties of these substances are known. There is a tendency for many manufacturers of chemicals to place rubber accelerators and compounding ingredients upon the market under fancy trade names. This may be done to disguise the true nature of the substance, especially if the latter has toxic properties. It is a practice to be discouraged unless the producer is willing to state the exact chemical nature of the compound or at least stand back of his product and guarantee it free from toxic and all other properties injurious to health.

For the purpose of presenting authentic data the author divides rubber compounding ingredients into four groups, as follows: (1) organic accelerators and dry organic compounds, (2) dry inorganic materials, (3) gums, resinous materials and waxes, (4) liquids and gases. Under this grouping, each compound or chemical will be described: (1) As to its origin, identification and chemical characteristics. (2) Its general use in the industry, especially as to its use in the rubber industry. (3) Its health hazards in the rubber industry and suggestions necessary to reduce or eliminate such hazards.

As the work develops new compounds will be added in their appropriate group places as new industrial conditions make necessary the use of new rubber compounding ingredients.

This important study is being conducted jointly by the Rubber and Chemical Sections of the Council. Work on the first group has been completed and it is expected that the whole will be finished by the close of this year.

[1] Read before the Rubber Section of the National Safety Council, Chicago, Illinois, September 28, 1927.

[2] Technical Superintendent, The Fisk Rubber Co., Federal Division, Cudahy, Wisconsin.

Variability of Ceylon Rubber Grades

The following is the introduction and summary of a report of the London Committee of the Ceylon Rubber Research Scheme on the results of investigations carried out at the Imperial Institute.

It was considered in Ceylon that it would be of interest to determine the extent of variability in rubber prepared commercially on different estates, as it was thought that the information obtained would be useful in planning future investigations. A set of estate rubbers, consisting of twelve samples of smoked sheet, seventeen of air dried crepe, and ten of machine dried crepe (i.e. dried in hot air), was therefore collected from twenty-four estates and forwarded to the London Committee for examination.

The question of the tests to be applied to these samples was considered by the technical sub-committee in London and it was decided to examine the whole series for variability in the following respects, each of which is of importance in considering the suitability of rubber for manufacturing purposes: (1) Plasticity. (2) Time of vulcanisation and tensile strength of a rubber-sulphur mixing. (3) Mechanical properties when vulcanised in a mixing containing zinc oxide and diphenylguanidine, the latter being an accelerator of vulcanization.

Summary

These investigations show that as regards plasticity the most uniform type of these estate rubbers from Ceylon is machine dried blanket crepe, which is a product peculiar to the colony. Smoked sheet is fairly soft on the whole, but is variable. Air-dried crepe is frequently tougher than the other forms. It appears, therefore, that the temperature of drying is of importance in connection with the plasticity of the rubber as received by the manufacturer, and that in the case of sheet rubber, drying in smoke serves the useful purpose of making the rubber more easily worked in the factory.

It is presumed from the correlation between the results of plasticity and vulcanizing tests that rubber from coagulum which has been allowed to mature is tougher than that from coagulum which has been machined and dried quickly. If this is the case, the extent to which the coagulum has matured appears to be an important cause of such variability as occurs not only in respect of vulcanizing properties, but also in respect of plastic properties. The vulcanizing properties of the samples, in a rubber-sulphur mixing, are fairly uniform and similar in this respect to rubber from Java, but only the machine-dried crepe satisfies the high standard of uniformity desired by some manufacturers.

The results obtained in a mixing containing zinc oxide and an organic accelerator of vulcanisation indicate that variations in vulcanizing and mechanical properties in this mixing are of no importance.

A consideration of the results recorded in this report suggests that further investigations would be desirable to determine (1) the cause of the variable plasticity of smoked sheet, (2) the effect of hot air drying on the plasticity and uniformity of crepe, (3) the effect of different periods of maturing the coagulum on the plasticity of crepe and sheet, (4) the degree of uniformity which it is possible to obtain in plasticity and vulcanizing properties when rubber is prepared under the most carefully standardised conditions, and (5) the effect of different proportions of various compounding ingredients on uniformity.

ZINC CARBONATE

In certain cases of rubber compounding zinc carbonate is preferable to zinc oxide simply because of its extremely poor coloring property. This fact permits the use of a considerable quantity of zinc carbonate without materially altering the appearance of the compounded rubber. For this reason it is being generally used in the manufacture of pale crepe soling. Zinc oxide is, however, superior to zinc carbonate in reinforcing value for rubber compounding.

A CHLORINATED RUBBER VARNISH

A rubber varnish said to be clear, stable, and to have other advantages is made by mixing chlorinated rubber and boiled tung oil or other boiled drying oil. United States Patent 1,635,812, July 12, 1927.

WAXING TO RETARD AGING

Protection of rubber products, such as hot water bottles, against sun cracking and air perishing is still sought to a considerable extent through dipping such thin, large surfaced articles in hot paraffin wax. Petrolatum is also used to some extent as a rubber dressing to retard aging, although it is claimed that rubber containing 5 per cent of petrolatum while at first absorbing oxygen more slowly later absorbs it more rapidly than does rubber alone.

Chemical Patents

United States

1,642,018 Rubber Conversion Product and Process. A composition of matter comprising the product of the reaction, under the influence of heat, of trichloracetic acid, a phenol, and rubber.—H. L. Fisher, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,643,205 Vulcanization Accelerator. The process comprises combining with rubber a vulcanizing agent and a compound resulting from the combination of a nitroso-dialkyl-aryl-amine with an aliphatic amine, and vulcanizing the rubber mix.—H. W. Elley and D. H. Powers, assignors to E. I. du Font de Nemours & Co., both of Wilmington, Del.

Dominion of Canada

274,113 Latex Product. The process of manufacturing a composite material by thoroughly impregnating fibrous absorbent material with a mixture of rubber latex and a soapy solution in a heated condition, but at a temperature sufficiently low to prevent coagulation of the rubber latex. The absorbed latex is subsequently coagulated and the resultant product is washed.—E. S. Ali-Cohen, The Hague, Holland.

274,444 Caoutchouc Compound Process. A method of compounding caoutchouc, which comprises adding a filler to a caoutchouc emulsion, coagulating the caoutchouc from the emulsion, adding a softening agent for solidified caoutchouc to the coagulant while it is in a highly plastic state, and subsequently milling the product.—The Goodyear Tire & Rubber Co., assignee of R. P. Dinsmore, both of Akron, O., U. S. A.

274,445. Vulcanization Process. A method of vulcanizing caoutchouc that comprises admixing caoutchouc with a vulcanizing agent, incorporating in the mixture a product formed by the condensation of an aldol with a mixture of amines, mixing an activator therewith and applying heat.—The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

274,446 Vulcanization Accelerator. An aldehyde aromatic amine reaction product, part or all of the aldehyde reagent being of an unsaturated aliphatic character, is used as an accelerator of vulcanization.—The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

274,450 Vulcanization Process. This method of accelerating the vulcanization of caoutchouc comprises vulcanizing it in the presence of a chlorine derivative of a mercapto-thiazole.—The Goodyear Tire & Rubber Co., assignee of Jan Teppema, both of Akron, O., U. S. A.

United Kingdom

273,961 Waterproof Sheet Material. Dry mineral filling powdered substances are mixed with a rubber solvent so as to form a paste to which is added rubber latex. The mixture is stirred until coagulation takes place and the dough rolled or pressed into sheets and vulcanized.—E. C. Villiers, Hendersyde, Ascot, Berkshire.

274,300 Linoleum Cement. A cement suitable for the manufacture of linoleum is made by the incorporation of resinous bodies in vulcanized rubber at such a temperature and for such a time that a change takes place in the rubber and a homogeneous mass results. The following example is typical. Old inner tubes are milled on hot rolls with 30 per cent of rosin. The adhesive cement that results can be blended with cork, wood, pigments, etc., similarly to linseed oil linoleum cement.—A. B. Craven, C. S. Bedford, and Yorkshire Dyeware & Chemical Co., Ltd., Pearl Buildings, East Parade, Leeds.

274,387 Regenerating Vulcanized Rubber. Regenerating vulcanized rubber is effected by dissolving it in tar oil, removing impurities by centrifuging, and precipitating the rubber from solution by means of alcohol or other suitable reagent. The tar oil and alcohol may be recovered by distillation.—C. O. Carlsson, 23 Karl Johansgatan,, Göteborg, Sweden.

274,408 Porcelain and Iron Cement. Porcelain and iron parts are cemented together by a vulcanizing rubber mix in the joints. A suitable mix is 90 per cent rubber, 2 per cent litharge, 2 per cent selenium oxide, ¾ per cent accelerator, and ⅔ per cent of zinc oxide or soot.—Studien Ges. fur Wirtschaft und Industrie, 11 Königinstrasse, Munich, Germany.

274,722 Linoleum Cement. Vulcanized rubber and resinous substances are heated together until a homogenous adhesive mass is obtained. The resinous product obtained from gutta percha or balata is employed either in the semi-fluid condition, or after conversion by oxidation into a solid resin.—A. B. Craven, C. S. Bedford, and Yorkshire Dyewear & Chemical Co., Ltd., Pearl Bldgs., East Parade, Leeds.

274,742 Liquid Rubber Compositions. An easily flowing but strongly adhesive solution suitable for coating fabrics, etc., is obtained by dissolving crude rubber in a solvent such as benzol, with or without carbon tetrachloride, and heating to about 100 degrees C. for 2 or 3 hours. Gums such as damar copal, and kauri; oils such as china wood and linseed oil cellulose products such as pyroxylin may be incorporated with the product, with or without thinners or dryers.—H. P. Butler, 20 Broad street, New York, N. Y., U. S. A.

274,968 Rubber-Cellulose Composition. Example, 10 pounds crepe rubber are dissolved in 20 gallons cyclohexanone and mixed with 2 pounds cellulose nitrate dissolved in 2 gallons butyl acetate. Non-volatile hydrogenated aromatic hydrocarbons may be added as softening agents.—P. Allman, 14 West Meadle, Chorlton-cum-Hardy, H. N. Morris, Alsace House, Dickenson Road, Longsight, and L. H. Marlor, Windy Neuk, Claude Road, Chorlton-cum-Hardy, all in Manchester.

Germany

449,903 Method of Vulcanizing. Ernest Smith, Turin. Represented by E. Herse, Kassel-Wilhelmshohe and H. Hillecke, Berlin S. W. 61.

450,182 Vulcanizing with Phosphor-sulphide Solutions. Stanley John Peachey, London, and Allen Skipsey, Surrey, England. Represented by B. Kugelmann, Berlin S. W. 11.

The Sulphur Situation

Before Goodyear discovered the vulcanization of rubber by means of sulphur, the rubber industry which has now grown to billion dollar proportions was a negligible factor. Thus, although the rubber industry today takes but a small proportion of the sulphur output, this non-metallic element is one of the essentials of the industry.

Practically all of the world's production of sulphur comes from three domes now being mined in Texas, of which two are operated by the Freeport Texas Co., and one, the most productive, by the Texas Gulf Sulphur Co. These salt domes, bearing sulphur, are of frequent occurrence along the Gulf Coast, and nearly all of the known deposits have been carefully prospected for sulphur, but only a few of them contain large enough quantities to be mined properly.

Constant search is being carried on by all of the important sulphur companies including the Union Sulphur Co., which has now no profitable deposit, to find new reserves, but so far as is known no deposit has yet been found in the class with the three great domes now being operated. The discovery of a mound comparable to any of the three now in operation would be of tremendous importance, and if controlled by one of the two operating companies would add greatly to the life of their operations. The world's two principal sources of sulphur in past years have been volcanic sulphur, mainly from Sicily, and pyrites, an iron ore containing large quantities of sulphur which is used in making sulphuric acid. The discovery of the American sulphur deposits revolutionized the world sulphur markets and the United States has controlled the situation ever since the deposits in Texas have been worked by the Frasch process.

Sicily has been a negligible factor in sulphur production for years and is now practically out of the running. Mines in Sicily are unprofitable to work and are kept open on government subsidy to provide work for the native population which would otherwise have no source of income. Sicily produced 273,000 tons in 1926, of which 208,000 tons were exported, against a total production of over 400,000 tons in 1913. Stocks in Sicily are down to 34,000 tons against 245,000 tons in 1923. This sulphur is sold under a marketing agreement with the American companies which are, of course, able to undersell Sicily. Japan produces a small quantity, about 40,000 tons annually, mainly for domestic consumption.

Sulphur production in the United States this year is running at an annual rate of about 2,300,000 tons, of which nearly 1,600,000 tons will be produced by Texas Gulf Sulphur Co., and 700,000 tons by the Freeport Texas Co. This is the largest production on record so far, but since sulphur is imperishable, inventories above ground have no effect on markets. The price of sulphur is now about $18 a ton at the mine and $22 a ton delivered New York, ex vessel. Sulphur for the rubber trade is put through an extra purifying process, as it must be acid free. Sulphur has a large number of industrial uses, but 80 per cent of all forms of sulphur used industrially goes into sulphuric acid. A small proportion of this is used in rubber reclaiming although the acid process is gradually dying out in favor of the alkali.

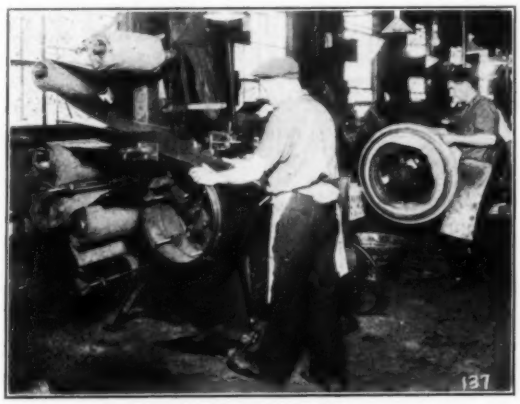
In 1926 a total of 7,035,000 tons, 50 degree Baumé sulphuric acid was produced in the United States. Of this, 1,850,000 tons went to the fertilizer industry, 1,510,000 tons were used by oil refiners, 1,250,000 tons by the chemical industry, 740,000 tons in steel picklings and galvanizing, and 725,000 in other metal industries and in storage batteries. The paper, rubber, and explosive industries are also important consumers, although the annual consumption of the rubber industry does not exceed 25,000 tons of 99½ per cent commercial and 100 per cent pure sulphur combined.

Analysis of Freeport and Texas Gulf properties by engineers shows that they have a potential life of 20 to 25 years, with ample reserves now above ground. Thus rubber manufacturers are assured of obtaining their very small yet tremendously important share of this output at present or lower prices for at least that period of time and probably indefinitely, since exploration and research will actively continue.

New Machines and Appliances

Special Tire Building Machines

The illustration pictures both the automatic chuck core system and the flat band method of tire building on a collapsible drum. Both methods of building are in vogue and the machines illustrated are built by the same company. Their method of operation is



De Mattia Tire Machines

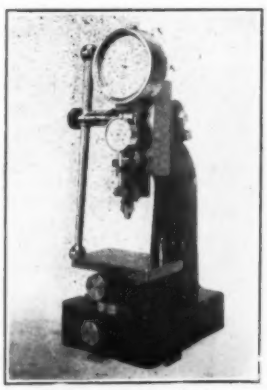
clearly indicated. The cut stock is held on suitable racks in the rear of the machines and its application to core or drum is controlled by the operator who starts and stops the motion of the machine by foot treadle control.

The assembly illustrated in the foreground of the picture comprises a collapsible drum, power stand, stock rack and fabric guide.

The complete equipment for both of the above mentioned tire building systems is manufactured by De Mattia Brothers, Inc., Clifton, New Jersey.

Constant-Diameter Hardness Indicator

The illustration represents an instrument for the measurement of quantitative and qualitative hardness in metals and all other materials including rubber. It is a static mechanical pressure machine acting on a small diamond ball impressor through a specially designed high duty weigher or pressure scale. The resulting depth of impression under load is measured by a standard micrometer gage reading to 1/5000 inch. The graduated pressure scale has a capacity of 160 kg., and also reads up to 352 pounds. The successful operation of the unit has been made practical by the introduction of a compensator device on the indicator that serves to correct the hitherto unavoidable errors due to contraction of the parts in the machine and the diamond itself when under strain, hard as is that material.



Monotron Indicator

The diamond ball point is 5/8 mm. in diameter and is made to penetrate the material to a depth of 9/5000 inch, thus producing an impression diameter of 0.36 mm. The comparative hardness of the material is measured in terms of the pressure necessary to produce this constant impression. The result can be expressed in per cent of hardness as compared with steel of known hardness. If the material is quite soft, such as rubber or fiber, a comparison can be made against a soft metal such as copper, which in turn can be standardized against hard steel.

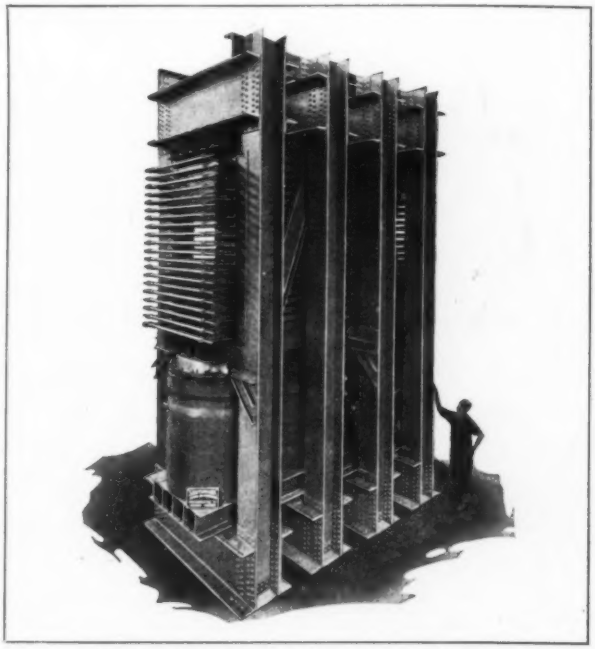
In operation the specimen is put on the table of the machine with the top surface approximately level and the ram is advanced downward until the hexagon cap contacts with the piece. The hand lever on the side is then removed until the lower or micrometer gage hand is moved to a responsive resting position, at which point the micrometer needle is adjusted to 0 through the medium of a thumb screw. The hand lever is again moved until the idler pressure bar reaches the weigher mechanism. At this point the indicator hand on the large dial begins to move away from 0 and at the same time the hand on the micrometer gage also moves until the required definite penetration is reached. For standard hardness measurement this would be nine divisions of the scale. The pressure reading is then taken from the larger dial in kilograms or pounds.

The model A Monotron has a capacity between the base and impressor point of 7 inches. The largest distance from the center to the back of the frame is 4¼ inches. It has a minimum height of 17 inches and weighs 61 pounds—The Shore Instrument & Manufacturing Co., Jamaica, New York.

Drying Press

While the machine here pictured is not strictly a rubber working press yet its general construction may be of interest.

The illustration represents a steam drying press of unusual design. It is of all steel construction and arranged with large low pressure cylinders so as to give perfectly uniform surface pressure. The frame is built of special section I beams and channels securely



Southwark Mammoth Steam Drying Press

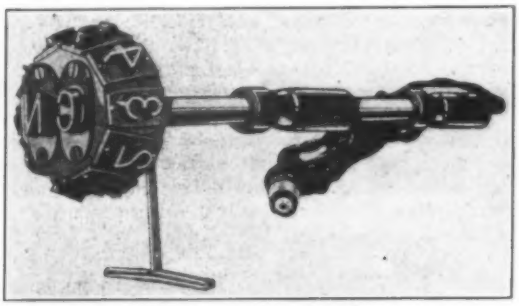
riveted. The steam platens are made from rolled steel plates 2½ inches thick, 12½ feet long by 4½ feet wide. Both upper and lower surfaces are highly polished. The steam passages are drilled and

connected so as to insure continuous and uniform heating of the platens.

The inlets and outlets of the steam connections of the platens are by means of telescopic piping supported by heavy channels so that when the press rams are in the lowest position a uniform opening of 2 inches between each of the 21 plates is obtained.—Southwark Foundry & Machine Co., Philadelphia, Pennsylvania.

Electric Numeral Brand

The illustration represents a most convenient electric branding iron for burning figures and letters into tires for identification and record of mileage.

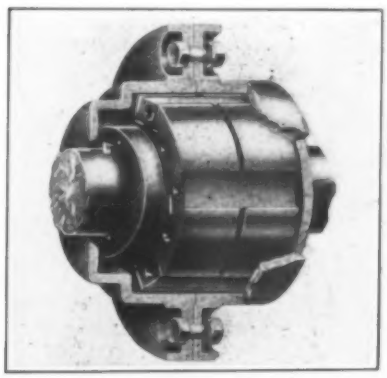


Electric Tire Branding Tool

The tool is made in three sizes of numerals, ½, 1 and 1½-inch and two interchangeable letters on face. It is heated from 110-volt lamp-socket and durably built for general service.—Burning Brand Co., 2524 West Congress street, Chicago, Illinois.

Flexible Coupling

The function of a flexible coupling is to correct the unavoidable errors which are present even in high class machine work and provide lateral float as well. The coupling here illustrated does this in a simple yet unusual way. Made entirely of metal, it is self-contained, dust proof and requires no adjusting or attention other than occasional oiling.



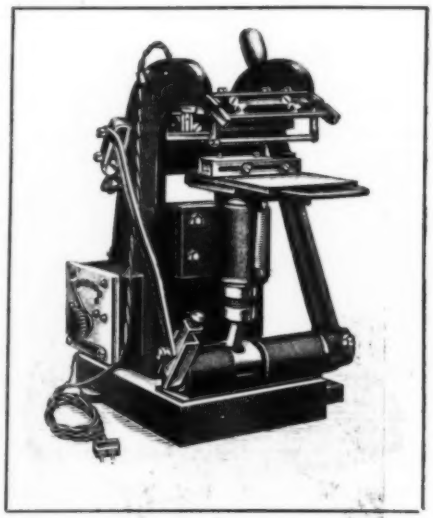
The Nicholson Coupling

The coupling consists of two cast-steel hubs in which dove-tail slots are cut to receive floating steel keys, of which three are in the smaller sizes and five in the larger. These are the working parts and are inclosed in a cast steel casing made in halves and secured to one hub, keep dust out, the oil in and limit the lateral movement of the keys in the slots. A definite clearance between each key and its slot permits an error of alinement between the two shafts equal to about double this clearance.

In action the floating keys are noiseless because the centrifugal force keeps them constantly thrown out into the dove-tail slots. When the torsional load on the keys becomes sufficient to overcome the centrifugal force, the keys are forced down and drive on the bottom of the slots or part way down according to the load. The ever present centrifugal force automatically controls the keys keeping them properly seated and quiet.—W. H. Nicholson & Co., 12 Oregon street, Wilkes-Barre, Pennsylvania.

Hard Rubber Printing Machine

The permanent marking of trademarks, designs, lettering, graduated scales, advertising matter, etc., on articles of hard rubber, synthetic resins, celluloid, wood, bone, leather and vulcanized fiber, is very difficult and unsatisfactory by ordinary means. For this purpose a special press has been devised in two forms, one for narrow and the other for wide printing. The mechanism of both presses is electrically operated and the printing stamps are heated by the same means. The printing is done by impressing the hot stamp upon metallic foil, a coil of which is supported and unrolls automatically. At each stroke of the press the foil is fed forward by a conveyer device that can be adjusted exactly to the proper elevation to coincide with the stamp. The foil comes in various widths suitable for the width of printing desired and in different colors. The printing blocks may be either flat or curved and conveniently interchangeable to print upon surfaces of different forms. The stamp removes only the length of foil required for each impression and need not be cleaned after use. The printed article remains clean and does not need to be polished. Further, the printing adheres permanently to the surface of the article.—Fritz Claussner, Nürnberg-Doos, Germany.



Claussner Narrow Printing Machine

Bead Remover and Tire Vise

In order to obtain greater width of material from small size scrap clincher tires the apparatus here pictured was designed. With this tool the beads are cut only through the plies of material that cover them. The tire is then placed in the vise and the beads are pushed off with the lever operated steel tool, leaving the liners the full width of the tires. The tire is next hung on the convex plate which places it in the most convenient position for preparing it to be pulled.

Hibbs' Bead Remover

The tread is very quickly started on this machine and the tire passed then to a stripping machine for removal from the carcass.—Rubber Products Co., Inc., 200 South Boaz street, Fort Worth, Texas.

Full Molded Tube Vulcanizer

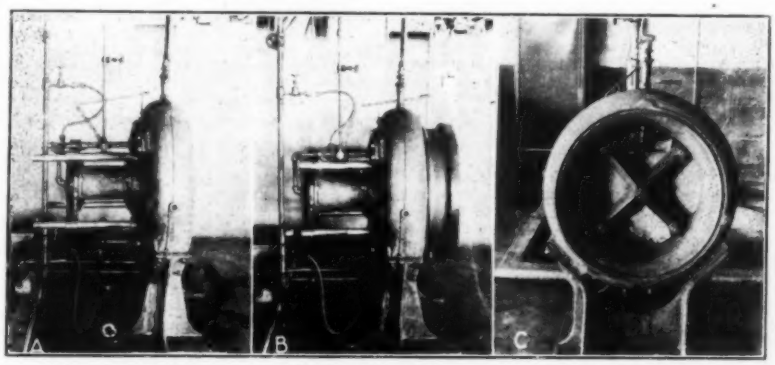
The latest type of vulcanizer for full molded inner tubes is here pictured in front and side views. It is supported upon a substantial base and comprises inner and outer steam jacketed shells. A small air cylinder is attached to the back of the outer shell and serves to move in or out the central shell.

In the operation of the vulcanizer, this shell serves as the core around which the tube is cured. The two steam jacketed parts of the vulcanizer separate slightly off the center line.

The center section is positioned by four guide rods and its outward movement is about one and one-half times the diameter of the tube being made. An adjustable packer is provided on the center section so that all straight valve stems can be attached automatically when pushed through the hole in the mold. The mold joints are cut on the inside at about 30 degrees to give a seating shoulder that will not wear, thus preserving their registration indefinitely.

The heat distribution is accomplished by forced circulation. The steam cavity is partitioned between the inlet and outlet so that the steam must pass completely around both sections.

In operation, the vulcanizer is opened as shown in B and the tube placed over the center section, the valve stem being pushed down into the hole. The vulcanizer is then closed by pulling the air lever located above the apparatus. As the mold closes the pressure fluid for inflation is automatically opened. When the tube is cured the internal pressure is released and vacuum is applied which collapses the tube and facilitates its removal. No more than 8 to 10 seconds need elapse from the time the tube is placed on the center section until the mold is closed and the tube inflated to mold contact.



SIDE VIEW, CLOSED SIDE VIEW, OPEN FRONT VIEW, CLOSED

Utility Inner Tube Vulcanizer

The molds can be machined to accommodate tubes of any sectional form. During the cure the button at the end of the valve stem is held away from the tube so that the rubber at that point is left full thickness under the lock-nut of the valve.—Utility Manufacturing Co., Cudahy, Wisconsin.

Process Patents

United States

1,642,305 Overshoe. G. L. Lawrence, Jr., Melrose, Mass.
1,642,394 Artificial Leather. R. K. Abbott, Cranston, assignor to Respeo Inc., Providence, both of Rhode Island.
1,642,541 Vulcanizing Tires. G. H. Ellinwood, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.
1,642,546 Impregnating and Vulcanizing Process. D. E. Hennessy, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.
1,642,614 Method of Curing Rubber Articles. R. R. Jones, Akron, Ohio.
1,642,664 Method of Making Irregularly Cored Hard Rubber Articles. A. E. Sidnell and E. C. F. Hartman, Salt Lake City, Utah.
1,642,847 Soling and Heeling Material. C. Emanuele, assignor of one half to F. J. Deibel, both of Cleveland, Ohio.

Dominion of Canada

274,208 Condenser. The Brandes Laboratories, Inc., assignee of W. R. Respess, both in New York, N. Y., U. S. A.
274,299 Tire. W. B. Wiegand, Kitchener, Ontario.
274,493 Vulcanization Method. W. H. Best, Newton, assignee of L. B. Conant, Cambridge, both in Mass., U. S. A.

United Kingdom

273,991 Latex. S. G. S. Dicker, 20 Holborn, London. (Rubber Latex Research Corp., 185 Devonshire street, Boston, Mass., U. S. A.)
274,387 Vulcanizing Footwear. L. Mellersh-Jackson, 28 Southampton Bldgs., London. (L. Candee & Co., East Street, New Haven, Conn., U. S. A.)
275,316 Method of Making Tanks, Pits, etc. N. Swindin, 4 Heathfield Road, Mill Hill Park, Acton, London.
275,626† Flexible Pipe. Goodyear Tire & Rubber Co., 1144 East Market street, assignees of E. G. Kimmich, 710 Chitty avenue, both of Akron, Ohio, U. S. A.

† Not yet accepted.

GOGGLES FOR INDUSTRIAL EMPLOYES

In an address delivered before a joint session of the National Safety Council and the National Committee for the Prevention of Blindness, Harry Guilbert, director of safety for the Pullman Co., advocated a mandatory ruling requiring every employe in an industrial shop to wear goggles while at work. Mr. Guilbert declared that such a rule is enforced in the repair shops and yards of the Pullman company, thereby protecting the eyes of approximately a thousand men from serious injury or destruction.

Machinery Patents

Dominion of Canada

273,876 Tube Vulcanizer. The KeHawke Mfg. Co., Minneapolis, assignee of F. J. Kenrer, Minneapolis and J. R. Ryan, St. Paul, all in Minnesota, U. S. A.
273,936 Tire Spreader. E. H. Schaeffer and D. Apfel, co-inventors, both of Reading, Pa., U. S. A.
274,227 Tire Machine. The Dominion Rubber Co., Ltd., Montreal, Quebec, assignee of A. O. Abbott, Jr., Detroit, Mich., U. S. A.
274,233 Tire Machine. The Firestone Tire & Rubber Company of Canada Ltd., Hamilton, Ontario, assignee of C. M. Semler, Akron, Ohio, U. S. A.
274,239 Strip Manipulating Machine. The B. F. Goodrich Co., assignee of J. V. James, both of Akron, Ohio, U. S. A.
274,378 Sole Attaching Machine. F. Nielsen, Epping, near Sydney, New South Wales, Australia.
274,443 Blank Forming and Manipulating Apparatus. The B. F. Goodrich Co., New York, N. Y., assignee of H. L. Young, Akron, Ohio, both in U. S. A.
274,447 Valve Mechanism. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, Ohio, U. S. A.
274,448 Calender Knife. The Goodyear Tire & Rubber Co., Akron, Ohio, assignee of K. Oyler, Los Angeles, Calif., both in the U. S. A.
274,451 Tire Retreader. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, Ohio, U. S. A.
274,484 Rubber Molding Apparatus. J. F. Allen, J. A. Himrod and E. E. Allen, each an assignee of one third of the interest, all of Erie, Pa., U. S. A.
274,492 Heel Mold. W. H. Best, Newton, assignee of L. B. Conant, Cambridge, both in Massachusetts, U. S. A.

United Kingdom

273,782 Tire Mold. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London and H. Willshaw, Fort Dunlop, Erdington, Birmingham.
273,996 Catgut Substitutes. Dunlop Rubber Co., Ltd., 32 Osnaburgh street, London, R. Truesdale, R. C. Smith and E. Simpson, Fort Dunlop, Erdington, Birmingham.
274,382 Footwear Vulcanizer. F. Nielsen, Grandview Parade, Epping, near Sydney, Australia.
274,442† Tube Vulcanizer. Goodyear Tire & Rubber Co., 1144 East Market street, assignees of R. W. Hainer, 961 West Exchange street, both in Akron, Ohio, U. S. A.
274,539 Tire Vulcanizer. C. MacBeth, 67 Norwich Union Chambers, Birmingham.
274,792 Vulcanizing Mold. A. Fraser, Factory Lane, Croydon, Surrey.
275,088 Slitting and Rewinding Machine. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (Cameron Machine Co., 61 Poplar street, Brooklyn, New York, U. S. A.)
275,162† Tire Shaping Machine. Morgan & Wright, assignees of A. O. Abbott, both of Belleview avenue, Detroit, Mich., U. S. A.

† Not yet accepted.

United States

1,642,008 Drying Machine for Rubberized Fibrous Composition. A mat of rubber impregnated fibrous material formed on a Fourdrinier machine is introduced to a dryer of the continuous type in which a continuously moving strip of material is caused to pass between two relatively large compression rollers covered with felt which absorbs the excess liquid. Thence the material passes over guide rollers through a drying chamber for final drying.—Paul Beebe, assignor to the Goodyear Tire & Rubber Co., both of Akron, O.

1,642,017 Sole Laying Machine. In some types of rubber soled footwear the sole is rolled up around the sides of the shoe for half an inch or more. Such rolled edge soles are laid by this machine the features of which are a central bottom pressure member flanked by two side pressure members. The machine also comprises a convenient support for a lasted shoe. The machine is operated by any suitable mechanism which will act rapidly so as not to prolong the pressure upon the uncured rubber sole.—A. C. Estey, Fayville, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,642,455 Stripping Device. According to this invention inner tubes cured upon circular mandrels are removed by exerting a suction upon them and they are then held expanded away from the mandrels while the mandrels are withdrawn.—M. A. Marquette, assignor to The Fisk Rubber Co., both of Chicopee Falls, Mass.

1,642,551 Apparatus for Applying Dust. By this invention dust can be applied to both short mats or long lengths of matting either as they come from the press or as they are repacked to eliminate the liner. The apparatus comprises a pair of tubes closed at one end and opening at the other end into a chamber connected to the delivery of a blower. Dust laden air from the blower flows out against the surface of the articles passing through the chamber of the machine.—G. J. Mead, Chicago, Ill., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,642,566 Apparatus for Unwrapping and Shipping Inner Tubes. By this machine inner tubes on straight mandrels contained in a cradle in which they were cured are speedily unwrapped by power as they are supported singly on rollers near the level of the cradle. The unwrapped tubes are placed on the supports over the cradle from which a second operator removes them singly to supporting rollers on the opposite side of the apparatus from the stripping rollers, where the tube is blown off the mandrel by air pressure.—T. J. Smith, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,642,998 Trimmer for Strip Material. This machine is designed to trim strip material such as rubber weather strips, tire beads, etc. In trimming tire beads the bead is circumferentially driven through the machine by action of circular cutting knives and roller, and is progressively trimmed at the edges.—F. D. Mason, assignor to The Bridgwater Machine Co., both of Akron, O.

1,643,120 Rotary Cutter. This machine comprises a bias cutting roller for preparing tire building fabrics, etc., and in combination with it, means for effectively removing the cut strips. The fabric to be cut is supplied to the cutting roll, carrying spiral cutting edges, so that it will lie in circumferential condition on this roll when pressed between it and a pressure roll. The cut strips are removed by an air blast directed to lift the leading ends of the strips and apply them to a belt conveyer which takes them away.—E. A. Hoener, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,643,196 Vulcanizer. This autoclave press type vulcanizer is distinguished from the ordinary vertical heater by employing an attachment for the manifolds whereby the condensed steam is automatically removed from the manifold system after each vulcanizing operation is completed so that substantially dry steam will be supplied to the cores or tires at each such operation.—R. W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,643,202 Tire Fabric Stretcher. This device is designed for stretching fabric bands, which are usually constructed from one or more plies of cord fabric, in conjunction with a drum or ring adapted to carry the band of fabric from the location where it is stretched to a position over the tire building core. When the fabric band is properly centered it is released and permitted to contract about the core.—H. A. Denmire, assignor to The General Tire & Rubber Co., both of Akron, O.

1,643,999 Apparatus for Making Inner Tubes. This invention handles tubular stock as it issues from a tubing machine, giving it while hot and plastic, approximately the longitudinal curvature which it is to have in the finished tube and thus avoid buckling or thinning its walls. This is effected by conducting the tubing, as formed, away from the tubing machine nozzle on a spiral conveyer which gives the tube stock the desired curvature.—C. H. Semple, Canton, O., assignor to Semple-Lee Processes, Inc., Akron, O.

1,644,433 Vulcanizing Mold. This invention provides an improved means for quickly mounting inflatable inner tubes in vulcanizers whereby to prevent localized seaming of their surfaces against the hot mold before the articles are fully enclosed and expanded. Thus, an inner tube supporting ring is provided, also a locking ring for securing the mold sections together.—C. H. Hudson, Akron, O., and H. C. Bostwick, Kenmore, O., assignors to The Akron Standard Mold Co., Akron, O.

1,641,959 Scraper Frame for Rubber Refiners. W. Breiding, Manville, N. J.

1,642,013 Footwear. C. H. R. Collins Marrickville, near Sydney, New South Wales, Australia.

1,642,289 Mold Cleaning and Polishing Apparatus. G. B. Arduser, Toledo, Ohio.

1,642,395 Tire Repair Tool. J. Abrahams, Bradley Beach, N. J.

1,642,456 Tube End Beveling and Sealing Device. C. E. Maynard, Northampton, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,642,523 Machine for Covering Elastic Filaments. C. B. Webster, assignor to J. K. Lanning, both of Fall River, Mass.

1,642,555 Engraving Machine. E. Pomplum and W. Jennerjahn, Cudahy, Wis., assignors to The Fisk Rubber Co., Chicopee Falls, Mass.

1,642,561 Bead Ring. J. Scherner, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,642,669 Winding Machine. J. A. Cameron and G. B. Birch, assignors to Cameron Machine Co., all of Brooklyn, N. Y.

1,642,712 Shoe Rack. C. S. Angers, Milwaukee, Wis., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. J.

1,642,947 Battery Box Mold. C. L. Fischer, assignor to The Goliath Rubber Co., both of Cleveland, Ohio.

1,643,493 Tire Vulcanizer. M. H. Gregg, Oakland, Calif.

1,643,712 Tire Mold. W. P. Henson, Sacramento, Calif.

1,643,869 Tire Vulcanizing Mold. P. Barre, Paris, France.

1,643,995 Overshoe Pattern. W. E. Piper, Sudbury, Mass.

1,644,327 Molding and Vulcanizing Apparatus. J. L. G. Dykes, Chicago, Ill.

1,644,416 Folding Packing Machine. W. Crooks, assignor to Belmont Packing & Rubber Co., both of Philadelphia, Pa.

Germany

499,500 Device for Repairing Soles and Heels. John Cunningham Cochrane and William Reid Gilmour, Lanarkshire, Scotland. Represented by, Emil Stein, Kronenstrasse 12-13, Berlin, W. 8.

Designs

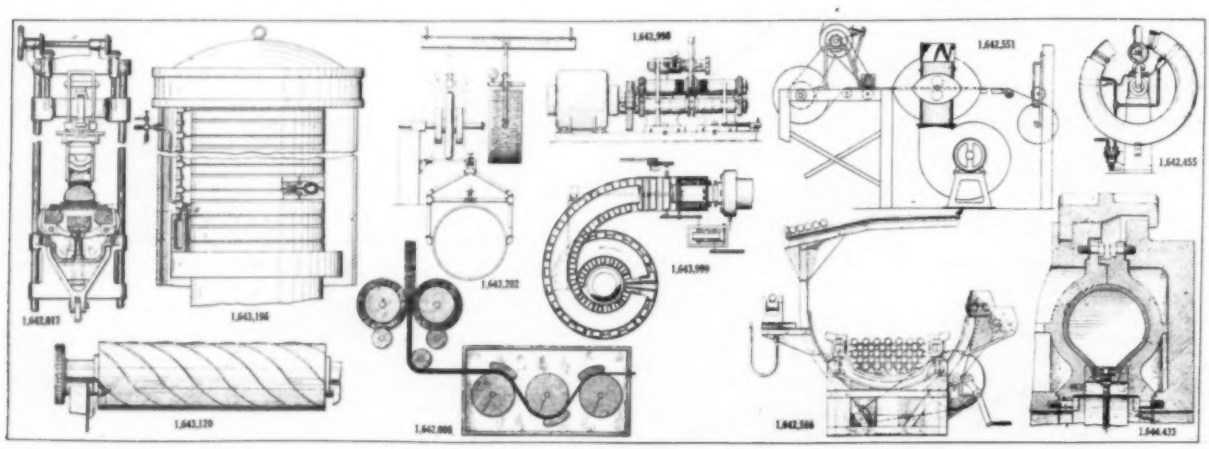
Germany

1,000,134 Cutting and Shaping Crepe Rubber Soles. Ferd. Schäfer Sohne, Pirmasens.

1,000,211 Device for Opening Vulcanizing Apparatus. The Dunlop Rubber Co., Ltd., London. Represented by Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt am-Main; and T. R. Koehnhorn and E. Noll Berlin, S. W. 11.

1,001,398 Tire Vulcanizing Mold. Peter Müller, Witteringstrasse 19, Essen.

1,003,178 Retreading Device. Favi A. G., Reuterstrasse 91, Bonn a. Rh.



Editor's Book Table

"Facts Affecting the Importation of Rubber Sundries and Specialties Throughout the World." Prepared by the Rubber Division for the use of American exporters. Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C. Flexible covers, 8 by 10¾ inches, about 100 pages. Indexed. Mimeographed.

This first edition of the Rubber Division Manual on export trade in rubber sundries and specialties contains current statistical data designed to furnish exporters with a convenient reference handbook summarizing briefly the importance of the American trade in these commodities with each foreign market. The information is drawn from official sources and is all basic. It is intended for the confidential use of firms which are American owned or controlled, and its secondary distribution is prohibited.

Competition in export trade in rubber sundries and specialties comes principally from Germany and United Kingdom, with Japan an important factor in far eastern markets, while other rubber manufacturing countries offer local competition against imported products. It is believed that the total available export business in rubber sundries and specialties does not exceed more than $15,000,000 annually

"Automobilereifen." A report on scientific investigations of tires in the Experiment Institute for Motor Vehicles of the Technische Hochschule, Berlin. Professor Gabriel Becker. Published by M. Krayn, Berlin W. Paper, 95 pages, 6⅝ by 9½ inches. Illustrations, graphs, diagrams.

These scientific investigations of automobile tires were instituted by the government and carried out with material supplied by the government, the object being to increase the efficiency of automobiles to the utmost while taxing the roads as little as possible by the study of the action of automobiles on roads and vice versa. The tires tested, products of the leading German manufacturers and of one firm in Holland, included solid tires, cushion, high and low pressure tires for trucks, omnibuses, passenger cars and trailers.

"Annual Report and Year Book, 1926-1927." The Planters' Association of Malaya, Inc. The Commercial Press, Kuala Lumpur. Boards, 153 pages, 6 by 8¼ inches, supplemented by 127 pages of appendices.

This year book embraces 14 chapters in which are discussed many subjects of interest to rubber planters; for example legislation, pests and diseases; standard qualities; rubber prices under restriction; Indian and Chinese labor; summary of Health Board enactments; alienation of land; coconuts, copra and other products; The Planters Loans Board; F. M. S. War Relief Board; Plantation nipah.

"Safety Code for Rubber Mills and Calenders." Bulletin No. 447 of the United States Bureau of Labor Statistics, sponsored by the International Association of Industrial Accident Boards and Commissions and the National Safety Council, Rubber Section. United States Government Printing Office, Washington, D. C. Paper, 6 by 9, 11 pp. plus 6 pp. listing. Illustrated.

This important publication embodies the recommended American practice approved March, 1927, by the American Engineering Standards Committee. Its practical value is indicated in the following quotation of its scope:

The entire code shall cover the mechanical hazards encountered in the manufacture of rubberized fabrics, rubber tires, fire and garden hose, footwear, molded rubber goods, rubber belting, reclaimed rubber, rubber solution and products made therefrom, and miscellaneous rubber materials; shall cover the machines used in breaking down, washing, milling, cutting, molding, and vulcanizing of rubber, together with calenders, spreaders, coaters, and driers and other machinery used in the manufacture of rubber sheeting; special machines used in the manufacture of rubber tires included, but spinning and weaving fabrics excluded.

"Density and Electrical Properties of the System, Rubber-Sulphur." Part I. Density of Rubber-Sulphur Compounds, by A. T. McPherson. Part II. Electrical Properties of Rubber-Sulphur Compounds, by H. L. Curtis, A. T. McPherson and A. H. Scott.

This publication is No. 560 of the Scientific Papers of the Bureau of Standards, an authoritative discussion of density and electrical properties under specific conditions, and a contribution of great value to rubber technologists and electrical engineers.

"The American Rubber Industry and Its Scientific Research Work."

This report of Dr. A. van Rossem, Director of the Netherlands Government Rubber Institute, covers the salient points of the American rubber industry as observed by Dr. Van Rossem when he attended the Raw Rubber Symposium of the Rubber Division of the American Chemical Society at Philadelphia last year. The pamphlet not only covers general rubber manufacturing practice of tires, tubes and mechanicals but in a special chapter discusses applied science in the American rubber industry.

"Chemical Engineering Catalog." Twelfth Edition, 1927. Published by The Chemical Catalog Co., Inc., New York, N. Y. Cloth, illustrated, 1,160 pages, 9 by 12 inches.

This well-known standard reference work is annually revised and is invaluable as a compendium of technical data for chemists, chemical engineers and manufacturers. The volume consists of four sections as follows: Classified Index of Equipment and Materials; Equipment and Supplies Section; Chemicals and Materials Section; Book Section. Each successive annual edition registers improvement over the one preceding and the present edition is no exception notably in the enlarged classified directory section.

New Trade Publications

The Firestone Tire & Rubber Co., Akron, Ohio, announces, in the October issue of The Firestone Non-Skid, the completion of a book of service station plans for buildings varying in price from $4,000 to $100,000. A broadside accompanies the house organ and gives details of the company's dealer franchise for the coming year.

Catalog No. 27, issued by Baker, Perkins Co., Inc., Werner & Pfluderer Division, comprises six sections in which are illustrated, described and pictured the company's extensive line of machinery for mixing, kneading, masticating, pulping, shredding, diluting, dissolving and dispersing. Also rubber washing and compounding with a special type of internal rubber mixer.

The Department of Commerce has issued a three page booklet entitled, "Specification for 2½-Inch Single-Jacketed Cotton Rubber-Lined Fire Hose," which has been compiled and promulgated by the American Marine Standards Committee. This is one of a series of standard specifications presented by the committee in connection with a list (O No. 1-1926) of essential kinds and sizes of hose for ship equipment.

The Textiles Section of the Record Book of Business Statistics, published by the United States Department of Commerce, is a 48-page compendium presenting monthly statistics of the textile industry from 1909 through 1926.

The Merchants' Association of New York Year Book, 1927, presents the usual summary of the association's activities together with lists of the officers, directors and committee members. The book fills 343 pages and contains 6,667 names, mostly those of firms and corporations, arranged alphabetically and also classified under the usual divisions.

E. I. du Pont de Nemours, Wilmington, Delaware, has just brought out an anniversary number of the Du Pont magazine. This contains many interesting articles on the various activities and developments of the company and is entitled "125 Years of Usefulness, 1802-1927."

The Cleveland Liner & Manufacturing Co., 5508 Maurice avenue, Cleveland, Ohio, is distributing to the trade a pulveroid sign, attractively colored in several shades of blue.

The Rubber Exchange of New York, Inc., Second Annual Report, 1927. In this 8-page pamphlet the president of the Exchange, F. R. Henderson, records a year of successful growth and operation of the Exchange. Followed by the report of the treasurer transmitting the balance sheet, operating income and expenses of the organization in which excess of income over expenses is shown.

Abstracts of Recent Articles

PROCESSES AND CHEMICALS USED TO RENDER FABRICS WATER-REPELLENT AND WATERPROOF.—Herman E. Wennstrom, *Textile World*, Oct. 15, 1927, pp 47-49.

COMPOUNDING INGREDIENTS AND THEIR HEALTH HAZARDS. Practical methods for safeguarding workers from the toxic dangers encountered in handling rubber compounding ingredients.—J. Newton Shirley, M.D., *Pro. Natl Safety Council*, 1927.

THE IMPORTANT PLACE SAFETY HOLDS IN THE RUBBER INDUSTRY. A discussion of statistics of accidents to rubber workers and the value of safety work.—Paul Van Cleef, *Pro. Natl. Safety Council*, 1927.

INVESTIGATIONS OF HEVEA BARK ANATOMY.—Herbert Ashplant, *Bull. R. G. Asso.*, Sept., 1927, pp. 571-586.

SOFT RUBBER FILTER-PRESS PLATES AND FRAMES.—H. E. Fritz and J. H. Clark, Jr., *Ind. Eng. Chem.*, Oct., 1927, p. 1,151.

STATIC DEFORMATIONS OF PNEUMATIC, SEMI-PNEUMATIC AND SOLID TYRES.—Raffaele Ariano, *L'Industria*, 1926, vol. 40, No. 2. Reprinted from *I. R. Jour.*, July 30, 1926.

RUBBER CHEMISTRY. A review of the problems and achievements of the rubber chemist.—William C. Geer, *Ind. Eng. Chem.*, Oct., 1927, pp. 1,095-1,098.

COATED TEXTILES. Materials and outline of manufacture.—Hamilton Bradshaw, *Ind. Eng. Chem.*, Oct., 1927, pp. 1,109-1,110.

MANUFACTURING AND TESTING RUBBER COATED AUTOMOBILE FABRICS. Tests applied to the materials and products.—M. N. Nickowitz, *Jour S. A. E.*, Oct., 1927, pp. 396-401.

ISOLATION OF THE NATURAL OXIDATION INHIBITORS OF CRUDE HEVEA RUBBER.—H. A. Bruson, L. B. Sebrell, and W. W. Vogt, *Ind. Eng. Chem.*, Oct. 1927, pp. 1,187-1,191.

EXPLANATORY NOTES ON VULCANIZATION.—T. E. H. O'Brien. *Second Quarterly Circular*, 1927, Rubber Research Scheme (Ceylon). Reprinted from *Trop. Agri.*, July, 1927.

THE EFFECT ON YIELD OF MANURING RUBBER WITH NITRATE OF SODA.—R. H. Stoughton-Harris. *Second Quarterly Circular*, 1927, Rubber Research Scheme (Ceylon). Reprinted from *Trop. Agri.*, July, 1927.

POSSIBLE CONTAMINATION OF LATEX WITH COPPER COMPOUNDS AS A RESULT OF SPRAYING THE TREES WITH BORDEAUX MIXTURE. Report from the Imperial Inst., *Second Quarterly Circular*, 1927, Rubber Research Scheme (Ceylon). Reprinted from *Trop. Agri.*, July, 1927.

MODIFICATIONS (IN RUBBER TECHNOLOGY) RESULTING FROM APPLICATIONS OF THE ANTI-OXYGENIC THEORY. Proposals are made to utilize the plasticity and adhesivity of freshly prepared latex for molding, etc.—J. Dougue, *Compt. Rend.*, 185, 389-391 (1927).

MODERN METHODS IN RUBBER FACTORIES.—Colin Macbeth. *Trans. Inst. Rubber Ind*, Aug., 1927, pp. 113-139. Followed by discussions. Illustrated.

PRODUCTION METHODS IN A RUBBER FACTORY.—H. C. Young, *Trans. Inst. Rubber Ind.*, Aug., 1927, pp. 134-148. Followed by discussion.

SPECIFICATIONS FOR RUBBER GOODS AND THE VALUE OF PERFORMANCE TESTS.—J. M. Bierer and C. C. Davis. *Trans. Inst. Rubber Ind.*, Aug., 1927, pp. 151-178. Followed by discussion. Illustrated.

THE ENERGETICS OF RUBBER.—Lotharn Hock, *I. R. Jour.*, Sept. 10 and 17, 1927. Graphs.

X-RAYS AND THEIR APPLICATION TO INDUSTRY.—G. L. Clark. Publications from M. I. T., Serial No. 198, July, 1927. Reprinted from the *Paper Trade Jour.*, Apr. 21, 1927.

THE EFFECT OF CARBON DIOXIDE AND ANTI-OXIDANTS ON RUBBER. A review and discussion of the action of oxygen and carbon dioxide on raw and on vulcanized rubber and of the theory and use of preservatives for rubber. Discussion.—S. S. Pickles, *Trans. Inst. Rubber Ind.* Vol. 3, No. 2, pp. 60-84 (1927).

RUBBER CULTURE IN SUMATRA. A review.—Eberhard von Wechner, *Kunststoffe* 17, pp. 154-155 (1927).

PHYSICAL TESTS AND THEIR SIGNIFICANCE. A critical discussion of tests for evaluating raw rubber, comparing technical mixtures, determining aging properties and controlling uniformity, such tests including stress-strain data, tensile strength, tensile product, elongation at a predetermined load, load at a predetermined elongation and permanent set. A general discussion follows the paper.—A. W. T. Hyde, *Trans. Inst. Rubber Ind.* Vol. 3, No. 2, pp. 23-45 (1927).

RUBBER-FILLER SYSTEMS. COLLOID PROBLEMS OF THE RUBBER INDUSTRY. It is found that fillers for rubber, of which the size of the particles lies between 0.5 and 1μ, diffuse through the solvation medium partially or completely with the rubber. The rate of diffusion, and the quantity diffusing with the rubber, depend upon the filler. The view that this behavior is due to the strongly dispersing action of the rubber is considered inadmissible, a purely mechanical explanation meeting the facts. It is assumed that the filler is adsorbed on the rubber, the rubber filler complexes moving together. The effect of carbon black on rubber may also be explained by the adsorption theory.—P. STAMBERGER, *Koll. Zeit.*, 42, pp. 295-300 (1927).

COMPARATIVE EXPERIMENTS WITH GAS BLACK AND LAMP BLACK.—P. Schidrowitz, *I. R. Jour.*, Oct. 8, 1927, pp. 569-572. Graphs.

ON THE BROKEN RACKING OF RUBBER, THE THERMIC CONDITIONS OF THE BROKEN RUBBER, AND THE ELASTIC EFFECT OF A DIFFERENTIATED HEAT ACTION. I. A contribution to the structure problem of broken-elastic and elastic-plastic characters of substances.—Dr. Heinrich Feuchter, *Kaut.*, Sept., 1927, pp. 278-284. Tables, graphs.

ON THE FOSSIL RUBBER BARKS OF THE OLDER BROWN COAL.—*Kaut.*, Sept., 1927, p. 287. Illustration.

DYNAMIC AND STATIC INVESTIGATIONS OF MOTOR TIRES.—Dr. Rudolf Ulrich, I., *Kaut.*, Sept., 1927, pp. 288-295. Graphs.

RUBBER-FILLER SYSTEMS. A contribution to the colloid problems of the rubber industry.—P. Stamberger, *Koll. Zeit.*, July, 1927, pp. 295-300. Illustrated.

TIME CONTROL APPARATUS FOR VULCANIZATION-INSTALLATIONS. *Gum.-Zeit.*, Sept. 16, 1927, pp. 2,866-2,868. Diagrams.

VULCANIZATION ACCELERATORS. A review of the patent literature of recent years.—Dr. Aladin, *Gum.-Zeit.*, Sept. 16, 1927, pp. 2,863-2,865; Sept. 23, 1927, pp. 2,923-2,925; Sept. 30, pp. 2,976-2,978.

CRITICAL CONSIDERATION OF SOME "NEW" PATENTS FOR VULCANIZATION PROCESSES AND FILLERS.—Dr. Hans Odenwald, *Gum.-Zeit.*, Sept. 30, 1927, pp. 2,974-2,975.

CONSIDERATIONS AND REMARKS ON THE CHEMICAL ANALYSIS OF RUBBER FOR ELECTRIC CONDUCTORS.—A. R. Mathis, *Le Caout.*, Sept. 15, 1927, pp. 13,686-13,690.

INVESTIGATIONS ON PRESERVED LATEX, V. Further data on preserving latex with ammonia.—O. de Vries and N. Beumée-Nieuwland, *Archief.*, Aug., 1927, pp. 289-316. English version, pp. 317-324.

INVESTIGATIONS ON PRESERVED LATEX, VI. Further data on rubber from latex preserved with ammonia.—O. de Vries and N. Beumée-Nieuwland, *Archief.*, Aug., 1927, pp. 325-342. Tables. English summary, pp. 343-346.

THE GROWING TOGETHER OF THE ROOTS OF THE HEVEA.—Dr. W. Bobilioff, *Archief.*, Aug., 1927, pp. 347-352. Diagrams and 8 full page photos. English summary.

AGING PROPERTIES OF RUBBER COAGULATED WITH FORMIC ACID.—Dr. R. Riebl, *Archief.*, Aug., 1927, pp. 354-366. Tables, English version, pp. 367-369.

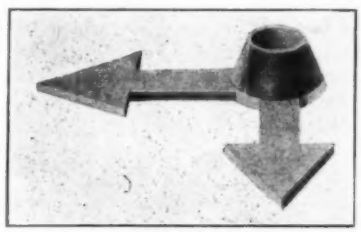
New Goods and Specialties

Instant Glass Cleaner

Bottles, filled with a solution called Mole and capped with rubber nose perforated to allow free flow of the liquid, are said to clean glass, marble, white paint, etc., instantly and effectively. With a circular motion the nose is pressed around the edges and across the glass, the Mole then being spread evenly over the whole surface and wiped dry with a clean cloth, when the glass will present a shining, polished and clean appearance.—Gold Dust Corp., 44 Beaver street, New York, N. Y.

Golf Tee with Aluminum Pin

The usual cause of a bad shot is failure to get a correct stance, resulting in the ball being driven in the wrong direction. To assist beginners and long handicap players remedy this defect, the Linoflite golf tee has been invented. The tee imparts a sense



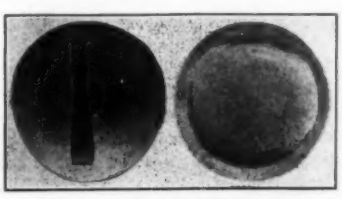
Linoflite Golf Tee

of direction and is of real assistance whatever stance is used.—The De Nevers Rubber Tyre Co., Ltd., Earlsfield Rubber Mills, Earlsfield, London, S. W. 18, England.

Shoulder Strap Fastener

Present day styles, with their use of thin, diaphanous materials, require that clasps holding lingerie shoulder straps be invisible under the sheerest of gowns. The illustrated device secures the straps firmly in place and is concealed beneath them.

This appliance is a rubber vacuum cup to which is attached a metal clasp which opens on one end similar to a safety pin. The straps or ribbons are slipped into the clasp which is then latched. A slight pressure of the fingers is sufficient to cause the cup to adhere to the skin, the suction being insufficient to cause irritation or discomfort, and may be readily removed by lifting one edge. This device is made in a variety of tints and shades to match the coloring of the ribbons to be held.



Lingerie Holder

Menagerie Stamp Set

Intended primarily to teach children sight reading, the outfit illustrated offers

excellent opportunity for education while at the same time allowing the child to indulge in one of the favorite pastimes of printing and coloring. The set consists of 12 rubber stamps picturing familiar animals and 12 additional stamps with which to print the names of the animals. A set of crayons is also furnished with which to color the pictures according to the child's fancy. The constant repetition will unconsciously impress the letters representing the names of the animals upon the mind of the youngster.—Baumgarten & Co., Inc., 213 East Fayette street. Baltimore, Maryland.

Antiseptic Bandage

Reducing to a minimum the possibility of pus or septicemia condition from a wound, the Presto bandage is so constructed that it cannot become contaminated by handling, the medicated gauze eliminating the need of washing with soap and water or any other solution. It is applied by cutting to the desired length, removing protection paper and gauze, placing the medicated gauze near the wound and fastening the adhesive tape.—Presto Bandage Co., Inc., 2939-41 Clybourn avenue, Chicago, Illinois.

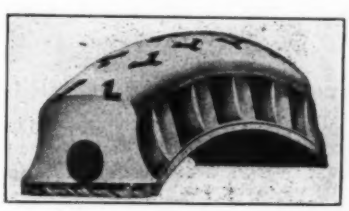
All-Rubber Protector

Among the new fall offerings in footwear protection is the Shuglov, a light weight all rubber product of The Miller Rubber Co., Akron, Ohio. Made in four colors—nude, gray, brown and black—the new footwear is described as stylish, snug fitting, attractive and easily cleaned, inside and out. An attractive plaid flap, in harmony with the body of the shoe, is designed to be worn either turned down or fitted snugly about the ankle.

Shuglov

Semi-Pneumatic Tire

The semi-pneumatic air core tire is a compromise between the pneumatic and solid tire. It is made with a very deep section from a special rubber compound which is both soft and weight resisting.



View of Semi-Pneumatic

It is manufactured on a single solid steel band. Through the center of the tire there is an air core in which a normal and even pressure is maintained. A special process prevents the core from coming in contact with the steel band.—Societa Italiana Pirelli, Milan, Italy.

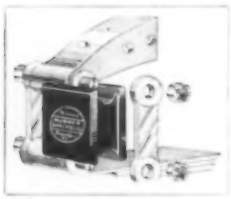
Tobacco Container

A tobacco container that is as easy to use as filling the pipe from the palm of the hand, and which when closed is

Tobacco-Tainer

as flat as a wallet is called the Tobacco-Tainer. Hand wrought from the finest leather, the case is lined throughout with rubber. It is quickly opened and closed, and will hold a full can of tobacco which can't leak or spill.—Buxton, Inc., Springfield, Massachusetts.

Rubber Shackle Blocks



Shackles for Auto

To permit greater comfort and ease in traveling over rough roads, rubber shackle blocks are used at the rear of the front and rear springs of a car. The blocks are made of a specially prepared rubber, pressed and vulcanized under high steam pressure. They have been subjected to a test of over 87 tons pressure and have returned to their original shape. The shackles are made to fit any car, ⅛ of an inch higher and ¼ of an inch wider than the space between the frame, spring and side links so that when the side link is fastened in place the blocks are held there under heavy tension and so take up all the wear that develops.—Rubber Shackle Co., Inc., 6928 Fifth avenue, Brooklyn, New York.

New Form of Rubber Road

A new idea in rubber roadways has been patented by P. Henry, of the Machine Brush Works, Gracechurch street, Bradford, Yorks, England, which the inventor claims will entirely eliminate skidding, re-

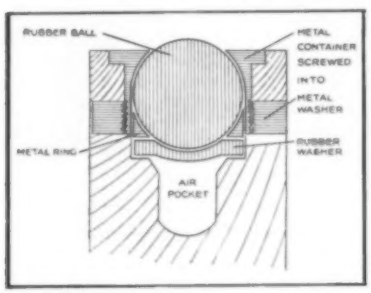


Diagram of Paving Block

duce vibration and noise, and which may be renewed from the surface without tearing up the road. The principal feature of the block is a solid rubber ball which projects above the surface of the road, the resiliency further increased by an air pocket and cushion so placed within the paving block as to greatly facilitate the depression and recovery of the ball as a vehicle passes over it. The block is drilled to receive a metal container which has a screw thread on the outside, this in turn attached to a large square nut or washer at the side of the block. Renewal of the ball, when necessary, is made by simply unscrewing the container.

It is believed by Mr. Henry that the silent road surface is only one of the many useful purposes to which his invention may be diverted, and that it will also be found to be extremely practical for the flooring of ships' gangways, holds and decks, warehouses, escalators, carriage steps and as a reinforcement of the front and rear fenders of motor cars.

Tailored Overshoes

The neat, trim lines of the Gaytees overshoes keep the feet looking smart in the stormiest of weather, and strike no inharmonious note in the color combinations of the ensemble. The boots are perfectly

Gaytees

tailored, slip on and off easily, fastening with an adjustable snapper hidden under a chic turnover cuff. Gaytees are made of fine smooth jersies, strong ribbed weaves and brocade-like fabrics, in the newest shades of gray, tan and other tones. The lining is fast and waterproof and will not discolor the stocking, and the light weight makes possible an afternoon's shopping with no discomfort. They fasten either with the snap or the kwik glide.—United States Rubber Co., 1790 Broadway, New York, N. Y.

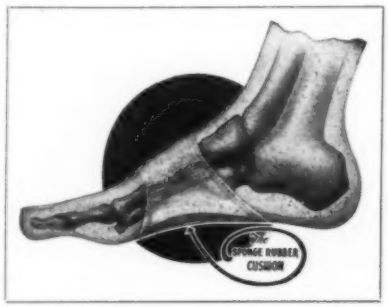
Rubber Insulators

Jiffy insulators are made of molded, flexible rubber, saving time, tape and trouble and insuring safety and satisfaction. They simplify assembling and increase production in wiring irons, toasters, heaters, automobiles, vacuum cleaners, electric signs, lamps, cords, sets, etc.—Ileite Electric Manufacturing Corp., 200 Fifth avenue, New York, N. Y.

Jiffy Insulators

Foot Band for Tired Feet

Archlets is the new scientific fabric and elastic band which the manufac-



Archlets

turer claims instantly banishes foot pains. It is not simply an instep band, but supports the arch from beneath as well as holding the bones in the position nature intended. By gently massaging the muscles of the feet Archlets not only give instant relief but overcome the cause of the trouble. A sponge rubber cushion, used in severe cases, is shaped to fit the arch exactly and is made in two thicknesses, one for the average foot, where the muscles are weakened and need massage; the other for the abnormal foot or the severe case of fallen arches. The cushions slip into a pocket and may be easily removed when Archlets needs to be laundered.

The manufacturer is the Anklarch Co., Lexington, Kentucky.

Accelerator Pedal

Instant response to the slightest touch of the foot is claimed for the accelerator pedal illustrated, which is made of heavy molded rubber reinforced with steel and attached

Grant Pedal

to the floor board with wood screws. It relieves the aching and straining of leg muscles, the foot falling into a natural position on the pedal, which is designed to conform to the shape of the average shoe. —Grant Auto Appliance Co., 2415 West Fourteenth street, Chicago, Illinois.

Financial and Corporate News

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Electric Hose & Rubber Co....	Com.	1½% q.	Oct. 15	.....
Electric Hose & Rubber Co....	Com.	½% ex.	Oct. 15	.....
Firestone Tire & Rubber Co...	Com.	$1.50 q.	Oct. 20	Oct. 10
Firestone Tire & Rubber Co...	6% Pfd.	1½% q.	Oct. 15	Oct. 1
Fisk Rubber Co.....	1st Pfd.	$1.75 q.	Nov. 1	Oct. 15
Fisk Rubber Co.....	Conv. Pfd.	$1.75 q.	Nov. 1	Oct. 15
Fisk Rubber Co.....	2nd Pfd.	$1.75 q.	Dec. 1	Nov. 15
General Tire & Rubber Co....	Com.	$0.50 q.	Nov. 1	Oct. 20
Goodyear Tire & Rubber Co. (Canada)	Com.	$1.25 q.	.....	.....
Hood Rubber Products Co.....	Pfd.	$1.75 q.	Dec. 1	Nov. 21
Hood Rubber Products Co.....	7% Pfd.	$1.75 q.	Nov. 1	Oct. 20
Hood Rubber Products Co.....	7½% Pfd.	$1.88 q.	Nov. 1	Oct. 20
Manhattan Rubber Mfg. Co....	Com.	$0.62½	Oct. 31	Oct. 20
Manhattan Rubber Mfg. Co....	....	$0.12½	Oct. 31	Oct. 20
Stedman Products Co.....	Pfd.	$1.75 q.	Oct. 1	Sept. 28
United States Rubber Co.....	1st Pfd.	$2.00 q.	Nov. 15	Oct. 20

New York Stock Exchange Quotations

October 21, 1927

Company	High	Low	Last
Ajax Rubber, com.....	7⅞	7⅜	7⅞
Fisk Rubber, com.....	16½	16⅛	16⅛
Goodrich, B. F., Co. (4) com.....	76½	75	75
Goodyear Tire & Rubber, com.....	58⅜	56⅛	56⅛
Goodyear Tire & Rubber, 1st pfd.....	94½	94½	94½
Intercontinental Rubber (1).....	12	11⅞	11⅞
Kelly-Springfield Tire, com.....	28	26⅝	27¼
Lee Rubber & Tire, com.....	12⅜	12	12⅜
Miller Rubber, com. (2).....	25⅝	25⅝	25⅝
Norwalk Tire & Rubber, com.....	2¾	2½	2½
United States Rubber, com.....	54	51½	51½
United States Rubber, 1st pfd. (8).....	100½	99½	100½

Akron Rubber Stock Quotations

October 19, 1927

Company	Bid	Asked
Akron Rubber Reclaim.....	18	19
Akron Rubber Reclaim, pfd.....	98	....
Falls	4½	6
Faultless	40	43
Firestone	150	155
Firestone, 6% pfd.....	107	107¼
Firestone, 7% pfd.....	107	....
General	....	175
General, 7% pfd.....	....	110½
Goodrich	76½	....
Goodrich, pfd.....	105	106
Goodrich, 6½s.....	107⅜	107⅝
Goodyear	59	60
Goodyear, 1st mtg. 8s 41.....	119⅜	119⅞
Goodyear, 1st pfd.....	94½	95½
Goodyear, 5s 57.....	95⅜	95⅞
India, com.....	17	18
India, 7% pfd.....	82	90
Mason	¾	1¾
Mason, pfd.....	....	15
Miller	25	27
Miller, 8% pfd.....	99½	100
Mohawk	20	22
Mohawk, 7% pfd.....	60	65
Rubber Service Lab.....	41	43
Seiberling	35	36
Seiberling, 8% pfd.....	101½	102
Star	1½	4
Star, 8% pfd.....	....	25

ONE PRICE POLICY

In what other than the rubber industry could this happen? An eastern tire making company opening a new branch in the West directed its manager to make no price concessions under any circumstances. A distributer offering to take at least $600,000 worth of goods yearly if allowed but one per cent, the manager wired headquarters about it. Reply: Not even one-tenth of one per cent rebate. That distributer has not yet been secured, but so well impressed is he with the one-price-for-all policy that he has helped the manager to get other accounts that will total about as much as the one he offered; and all at prices strictly net.

New Incorporations

BEYER TIRE & SERVICE CO., INC., October 18 (New York), capital $30,000. Lester T. Beyer, Harry K. Stull, E. Pearl Beyer, all of 3725 South Salina street, Syracuse, New York. Principal office, Syracuse, New York. To manufacture tires and automobile accessories.

CABLE RAINCOAT CO., September 12 (Massachusetts), capital stock 1,000 shares of no par value. Robert P. Cable, president and treasurer, 9 Melville avenue; Isadore Penn, clerk, 37 Browning avenue, both of Dorchester; Samuel Sklar, director, 76 Allen street, Boston, both in Massachusetts. Principal office, 68 Northampton street, Boston, Massachusetts. To buy, sell and deal in raincoats and rubber goods.

J. P. DOLAN CORP., October 5 (New York), capital $10,000. John P. and Florence Dolan, both of 4 Longmeadow Road, Yonkers; Mary E. Smith, 15 Pearsall avenue, Glen Cove, both in New York. Principal office, Long Island City. To manufacture tires.

ECONOMY SHOE HEEL CORP., October 6 (New York), capital stock 5,500 shares, 5,000 shares par value $10 and 500 shares no par value. Robert Fulli; Peter Beltrami, both of 52 Grove street and Evaristo Andreatta, 1560 Broadway, all in New York City. Principal office, Manhattan. To manufacture rubber and leather heels.

GERSHON & ESKIN INC., September 19 (New York), capital $10,000. Abraham Eskin, 285 Cypress avenue; Julius Gershon, 2310 Morris avenue, and Irving Berger, 1457 Broadway, all of New York City. Principal office, Bronx. To manufacture tires.

H. & R. RUBBER CO., September 27 (Massachusetts), capital $10,000. Richard A. Hunt, president; Atherton N. Hunt, clerk, both of 29 Vine street; Drew B. Hall, treasurer, 156 River street, all of Braintree, Massachusetts. Principal office, Old Colony avenue, Quincy, Massachusetts. To manufacture and deal in rubber goods.

C. I. LEE & CO., INC., September 30 (New York), canital $10,000. Frederick E. Hershkowitz, Harry Zimmerman and Frederick Katz, all of 2 Lafayette street, New York City. Principal office, New York City. To manufacture and deal in rubber goods.

LONDON TIRE CO., INC., September 14 (New York), canital $50,000. Sidney Behrman, 1425 East 26th street; William H. Minkoff, 1216 Avenue L; Herman M. Goldberg, 2045 Douglass street, all of Brooklyn, New York. Principal office, Manhattan. To manufacture tires.

NEW ENGLAND PRODUCTS CORP., October 6 (New York), capital $40,000. Arthur S. and Lillian A. Brock, both of 556 West 173rd street, New York City; Clarence A. Pinkham, 3420 93rd street, Brooklyn, New York. Principal office, Manhattan. To manufacture hard and soft rubber.

NO-FLATS PUNCTURE PROOF CO., INC., October 1 (New York), capital 300 shares of no par value. John J. Cromshow, 139 East 59th street; Wilhelm Sobanek, 409 East 71st street; Karl Kleppel, 350 East 76th street, all of New York City. Principal office, New York City. To manufacture tires and tubes.

PROGRESS MANUFACTURING CORP., September 27 (New York), capital stock 3,000 shares, 500 shares par value $100 and 2,500 shares no par value. Charles Drees and Williard V. Johnson, both of 314 McKinley Building, 259 Delaware avenue; Bronson Rumsey, 133 Chanin Parkway, all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires and rubber products.

SAFEWAY RUBBER CO., May 5 (California), capital $200,000. H. F. and W. E. Privette, Long Beach; C. R. and W. L. Privette, Santa Ana; and H. C. Privette, Wilmington, all in California. Principal office, Los Angeles, California. To deal in tires, tubes and other rubber goods and products, also to manufacture puncture proof inner tubes.

EDISON ASKS BRAZIL FOR RUBBER SEEDS

A special telegram to *The New York Times* of August 31, states that Thomas A. Edison had cabled to Brazil for rubber plant seeds. This would indicate a serious intent on Mr. Edison's part to evolve a species of rubber plant suited to continental United States conditions. While no name is mentioned, it is presumed the seeds requested are of the Hevea species, the tree which provides our plantation crude rubber of commerce.

Perhaps Mr. Edison may not be aware of the considerable scientific work conducted by American organizations both in our own country and in Sumatra in developing unusually good types of rubber plants. INDIA RUBBER WORLD has described in its pages the very thorough investigations conducted by the Continental Rubber Co. of New York in selection, breeding and propagation of a type of guayule rubber plant which could be adapted to grow throughout the cotton growing area of the South. The research work of the United States Rubber Plantations, Inc., at its plantations in Sumatra reveals an advance in methods of selection, breeding and propagation in the case of the Hevea rubber tree that deserves universal recognition and applause. It would seem that Mr. Edison would best be served by obtaining seed from Sumatra rather than from Brazil. From this source he could get seed or buddings whose ancestry is fairly well known, whereas from Brazil, as far as published records go, this is not possible.

Of course, Mr. Edison may have good reasons of his own in requesting seeds from Brazil. Because of the wide publicity given to his interest in rubber growing, his every move in this connection is read with keen interest by the general public. What he does or says will naturally have a widespread influence.

The Rubber Industry in America

Ohio

Production of tires has dropped considerably during the past few weeks owing largely to curtailed operations in the automobile industry. Operating schedules of most rubber companies in the Akron district are at 75 per cent of capacity, and are likely to continue at this rate during November. Tire manufacturing departments at the Goodyear, Goodrich, Firestone and Miller plants are working on a four or five day a week basis, with the smaller companies maintaining about the same ratio of production. Many workers have been laid off or transferred to other departments.

Just as the delayed appearance of the new Ford car has slowed up the sales of automobiles, this same factor appears to have been a disturbing element in the rubber industry. Observers look for stimulation in the tire business, however, during November, when the Ford plants are expected to finally get into heavy production.

The regular program of spring dating tire sales went into effect November 1. Terms of the plan are substantially the same as those of last year except that solicitation of orders from dealers begins two months earlier. Shipments may be made after November 15, but sales managers say little will be done until December 1. Dates of payment are April 1, May 1 and June 1, depending on the zone in which the dealer operates. Manufacturers did not take spring dating orders last year until January 1. By allowing dealers to buy tires in the late fall and winter months and pay for them in the spring the dealers can put in a supply on long time credit, while the manufacturers can operate their plants at higher levels than otherwise in a dull season. The practice should stimulate sales of tires in the last two months of the year.

Rubber footwear departments at The B. F. Goodrich Co. and Firestone Tire & Rubber Co. are being speeded up to supply increased orders for boots and shoes from dealers all over the country. The big Goodrich warehouse at Akron is being stocked to capacity, so the company will be ready to meet the heavy demand expected when the first snow falls this winter.

Prices of tires are fairly stable, and no changes are expected in the retail market. Early in October manufacturers granted dealers a 5 per cent rebate on certain lines to enable them to obtain a larger profit on volume sales to commercial accounts but there was no general tire price reduction put into effect as had been rumored.

A note of optimism has been injected into the tire situation by the negotiation of several large contracts by automobile manufacturers for original equipment tires up to June of next year. Booking of this business seven or eight months ahead, together with operation of an earlier spring dating plan, puts the rubber industry in a better position to gage its demands for next year.

F. W. Climer, manager of the labor department of the Goodyear Tire & Rubber Co., Akron, Ohio, gave a talk in connection with the National Safety Council Proceedings. Mr. Climer spoke on the "successful employes' benefit associations."

Goodyear Buys Rubber Lands

The Goodyear Tire & Rubber Co., Akron, Ohio, has purchased a tract of 29,000 *acres in Sumatra for rubber plantations. This brings Goodyear plantation acreage in the Far East close to* 50,000, *the company having started its first plantation of some* 20,000 *acres there in* 1916. *The first plantation is in full bearing.*

The new rubber land, which was purchased from a Japanese syndicate, is located about 150 *miles south of the original Goodyear plantation on the Bila River which gives transportation access to the sea. A new railroad is also projected by the Dutch Government through the property.*

The plantation will be developed under the direction of J. B. Ingle, managing director of Goodyear Orient Co., and O. D. Hargis, general manager of Goodyear's present plantation. Between 5,000 *and* 6,000 *men will be put to work immediately in clearing the jungle and setting out the rubber trees. This work will take three years.*

C. P. Hall, head of the C. P. Hall Co., Akron, Ohio, dealer in rubber chemicals and ingredients, was in New York City last month.

M. W. Clark who has been appointed special representative in Chicago for the Republic Rubber Co., Youngstown, Ohio, has had wide experience in the mechanical rubber manufacturing field. Until October, 1926, he was manager of the belting, packing and matting departments, when he was transferred to the sales department.

The Johnson Rubber Co., Middletown, Ohio, has been organized by officials of the Ohio Pail Co., of that city. Rubber tubes and gaskets of all kinds will be manufactured by the company.

Seruco Rubber Co., Akron, Ohio, is another newly organized rubber company, incorporated to manufacture and distribute all kinds of rubber articles.

Harry F. Porter, new manager of the National Tire Dealers Association, has moved the association headquarters from Milwaukee to Akron, Ohio. Mr. Porter has had many years' experience in the rubber industry and is known as an expert in organization work.

The Custom Built Tire Co., Salem, Ohio, has announced a full line of custom built tires.

Lambert Tire & Rubber Co., Akron, Ohio, announces the acquisition of four new dealer accounts in Evansville, Indiana; Jackson, Mississippi; Cincinnati, Ohio and Atlanta, Georgia.

M. E. Wagner, of the Firestone Tire & Rubber Co.'s export department, sailed October 11 for Egypt, where he will develop the company's business in that section.

T. B. Tompkinson, formerly general manager of Canadian Goodrich is now controller of The B. F. Goodrich Co., Akron, Ohio.

The India Tire & Rubber Co., Akron, Ohio, announces that C. T. Morledge has been appointed manager of tire sales; A. C. Fisher, manager of the accessory and repair material department, has recently taken over the duties of advertising manager, in addition to those of his former position; and J. N. Dunlevy, formerly advertising manager, has been transferred to direct sales in the Akron district.

The Triangle Tire & Rubber Co., Canton, Ohio, reports sales for the first nine months of the year as slightly 40 per cent in excess of the same period in 1926. Distribution is being obtained in about 36 states through about 1,800 dealers.

Instalment Policy Adopted by Seiberling

After a nationwide study of instalment buying, the Seiberling Rubber Co., Akron, Ohio, is recommending to all its dealers that they adopt this sales policy. Before suggesting the extension of the courtesy of instalment payments, a sound financial plan was put into practice by several of the dealers in different parts of the country, with results which indicated that the public has been so thoroughly educated in the principles of instalment buying that it welcomes the opportunity of obtaining tires on the partial payment plan.

One feature of the investigation and experience of the Seiberling dealers was that the workmen employed regularly pay their bills more promptly than any other class of citizens. The Seiberling company is assisting the dealers in each state to formulate a policy to comply with the state laws.

The Aetna Rubber Co.

Four acres adjacent to its present location in Ashtabula have been acquired by The Aetna Rubber Co., 811-815 East 79th street, Cleveland, Ohio, and plans are being prepared for a dipped rubber ware plant especially equipped for the manufacture of electric linemen's gloves. The new plant will be designed for super efficient operation and will have a capacity of 3,000 pair of electric linemen and 75,000 pair of household gloves per month. The increasing demand for domestic and export trade has made this expansion necessary, and building operations will start immediately, plans calling for the completion of the plant in sixty days.

It is the intention of the management to move the present glove division from the Cleveland plant to make room for further increase in production of tubing and washers. S. T. Campbell is president and general manager.

The Leo Meyer Co., Akron, Ohio, has just completed an addition to its factory. This now gives the company 55,000 square feet of floor space, which is devoted exclusively to the manufacture of skived patches, reliners, lace boots and plaster patches.

C. C. Prather, general sales manager of the India Tire & Rubber Co., Akron, Ohio, called on the Boston, New York and Philadelphia branches and several of the eastern dealers, last month.

The Akron Barrow Co., 3140 East 65th street, Cleveland, Ohio, whose products are familiar to rubber manufacturers, has changed its name to the General Wheelbarrow Co.

The Star Vulcanizing Co., Steubenville, Ohio, will sell India tires and tubes.

GOODRICH COMPANY EXECUTIVE CHANGES

The Board of Directors of The B. F. Goodrich Co., at a special meeting held September 27, named Harry Hough president to succeed the late Bertram G. Work. D. M. Goodrich was made chairman of the board and J. D. Tew, factory manager, was advanced to the first vice presidency and made a member of the executive committee.

Harry Hough

The Goodrich company, in making this announcement, calls attention to the fact that in the sixty years of its existence it has had only three presidents, men who have been outstanding leaders in the rubber industry. The directors were inspired in their choice of a new president by a wish to place in this important position one whose past performance justified his selection as successor to those executives whose characters and abilities have made the company a dominant factor in the industrial world.

A comparatively young man, Mr. Hough at 45 is well fitted to bear the responsibilities entailed in the carrying out of the Goodrich policies. His first experience in business was as an accountant, having been connected for nine years with Lovejoy, Mather & Hough, auditors and accountants, giving up a membership in the firm to go to Goodrich as comptroller. He was comptroller from 1918 until 1926, when he was made vice president.

D. M. Goodrich is the youngest son of Dr. B. F. Goodrich, founder of the company, and his election to the chairmanship of the board was unexpected as he has never before held title as a Goodrich officer. He was educated at the Akron public schools, later attending St. Paul's School in Concord, New Hampshire, preparatory to entering Harvard.

J. D. Tew was born May 2, 1882, at Jamestown, New York, and is a graduate of Harvard University. He was superintendent of the tire division until 1925 when he was made works manager. Mr. Tew is a son of Harry W. Tew who was associated with Dr. B. F Goodrich in the establishment of the first rubber factory in Akron, in 1869.

In connection with the changes in Goodrich, a great deal of surprise has been occasioned by the resignation of M. C. Van Cleef, secretary of the corporation since 1918. Previous to his appointment as secretary, Mr. Van Cleef had acted as resident counsel for the company, his success in this connection attracting the attention of the late B. G. Work. No explanation of his resignation has been forthcoming from Mr. Van Cleef or any Goodrich official.

Mohawk Rubber Co., Akron, Ohio, experienced gains in both sales and earnings during the first nine months of 1927, officials told salesmen gathered in Akron for the annual sales conference during the first week of October. The new Mohawk flat tread balloon tire was demonstrated by J. F. Jones, general sales manager, and Harry Corbett, divisional sales manager. President S. S. Miller, Mr. Jones, and Treasurer Ray Bloch outlined the company's history telling of its early struggles in the industry.

The National Association of Waste Material Dealers, Inc., will hold its fall meeting at the Congress Hotel, Chicago, Illinois, on October 18 and 19, and will close with an association dinner. President Rady will preside and matters of general interest to members of the association will be considered at the general meeting to be held on the afternoon of the nineteenth.

CHEAP RUBBER

Prospects of cheap and abundant rubber in the near future are not at all encouraging according to one British analyst of the planting situation. His estimate of planted acreage for the whole world is 4,811,000, which, averaging 350 pounds per acre, might yield 751,718 tons. Of this total the well-kept Malayan area should afford 377,109 tons, although it supplied but 302,000 tons last year, when exportable had been put on a 100 per cent basis. He concludes that, apart from a possible 40,000 tons of wild rubber yearly, the world will have to depend for the next seven years at least upon present acreage and its potential output; and meanwhile relief from Liberia, the Philippines, and budding will be insignificant.

The K. & W. Rubber Co., Delaware, Ohio, according to C. P. Thompson, vice president, has had an exceedingly prosperous year.

Massachusetts

The rubber factories of Massachusetts are operating at capacity in seasonal lines such as rubber footwear and clothing, with mechanical and tire lines reasonably busy considering the state of the automotive industries at the present time. The recent cut in tire prices has made for tightening up at the tire plants, every possible expense and overhead reduction being sought at the present time.

Converse Tire & Rubber Co., Malden, Massachusetts, announces that Hugh Bullock, president, has resigned, and also William L. Burgess, vice president and general manager. Mr. Burgess has joined the Quaker City Rubber Co., Philadelphia, Pennsylvania, in the tire sales organization, while Mr. Bullock has not divulged his future plans. Converse Rubber Shoe Co. is running the biggest footwear volume in its history with a night shift of shoemakers. The output is sold up to the first of the year on boots, gaiters, and gum shoes. A new pressure cure vulcanizer is being installed to increase capacity on heavy footwear. At the Brockton Fair recently the company gave a domenstration on making rubber shoes.

Hood Rubber Co., Watertown, Massachusetts, was among the local rubber companies which exhibited their products at the exhibition of the Associated Industries of Massachusetts, recently staged at the Copley Plaza Hotel, Boston.

New England Purchasing Agent's Association members were guests of the Hood Rubber Co. at a plant visit on October 26.

Devon Mills of the Goodyear company at New Bedford, Mass., was shut down October 29.

AUTOS FOR ALL IN NEXT FOUR YEARS

In an address before the automobile accessories group of the American Hardware Manufacturers' Association in Atlantic City, David Beecroft of Philadelphia, vice president of the Chilton Publishing Co., predicted that in 1931 practically the entire population of the United States would be on wheels. He predicted that by that time 90 per cent would be within ten miles of a Federal highway and that 96 per cent would be within the same distance of an improved hard surfaced road.

"I would advise automobile accessories dealers to locate in small towns," said Mr. Beecroft, "if they wish to improve their business."

New Fisk Executives

From the Fisk Rubber Co., Chicopee Falls, Massachusetts, comes the announcement that J. D. Anderson, vice president; C. W. Sanderson, manager product development department; Frederick B. Clark, director of purchasing; Thomas Midgley, experimental department, and A. E. Trudeau, superintendent of power, have resigned. H. T. Dunn, president, announces the appointment of B. H. Fratt, who has been vice president in charge of the Cudahy Wisconsin division, as vice president in charge of manufacturing, at both the Chicopee Falls and Cudahy plants, and Elmer Dearth, who was general superintendent of the Cudahy division, is placed in charge of the product development department, with headquarters at Chicopee Falls. These changes are made, says the announcement, to link the two plants more closely together and to create greater efficiency in plant operations.

Manomet Mill No. 4, New Bedford, Massachusetts, has been purchased, according to press reports, by the Firestone Tire & Rubber Co. from the Manomet Corp. The Manomet mill is a cord tire fabric plant having 118,000 spindles and 64 looms. The purchase price was not disclosed but it is believed to be in the neighborhood of $1,750,000 to $2,000,000.

Vice President Fenton

At a meeting of the board of directors of The Fisk Rubber Co., Chicopee Falls, Massachusetts, held in New York on October 6, Daniel H. Fenton of Springfield, Massachusetts, was elected a vice president. For the present he will devote his attention to the expansion of the overseas business of the company.

Mr. Fenton has been connected with the Fisk company since 1919, for the past year giving his attention to the foreign field, and has just returned from an extended stay in Europe. He is a graduate of Yale, receiving his Ph.D. in 1916, and was formerly an instructor at Princeton and at Yale. During the World War he was in command of Battery C, 45th Artillery C. A. C..

Employment Figures

State Employment Bureau figures released October 20 for the month of September confirm trade reports of increasing activity in the local rubber industry. The number employed in rubber footwear increased from 8,860 to 9,032 and in rubber goods, including tires and tubes from 2,633 to 2,711. Average weekly wages showed increases from $25.67 to $26.23 in footwear and from $24.94 to $25.42 in the other branch. The index on employment in footwear stands at 101.5 the first time it has shown above normal for some months, and rubber goods including tires and tubes showed only a slight recession still being 120.0.

New York

U. S. Personnel Changes

G. S. Shugart, second vice president in charge of tire sales for United States Rubber Co., 1790 Broadway, New York, N. Y., has announced the appointment of Arthur B. Fennell as general manager of tire sales with all field managers reporting directly to him. Mr. Fennell has been connected with the company since 1910, serving as tire salesman in Buffalo, tire department manager in Syracuse and Buffalo, and advancing to the managership of the latter branch.

M. G. O'Hara has been made supervisor of the jobbing lines of tires. His connection with the U. S. company dates from 1905, his executive ability earning him rapid advancement from tire salesman to manager of the Minneapolis, Pittsburgh and New York branches, respectively. For the past two years he was manager of soles and heels sales.

Leon Ekert, of Ekert & Co., Hamburg 36, Ekerthaus, Germany, importer of all kinds of rubber goods, sporting goods, automobile accessories, etc., is visiting in the United States and will be pleased to receive offers on goods which can be exported. Mr. Ekert may be reached care of United States Rubber Export Co., Ltd., 1790 Broadway, New York, N. Y.

The Roessler & Hasslacher Chemical Co., 709-717 Sixth avenue, New York, N. Y., is a distributer of sulphur chloride for the Niagara Smelting Corp., of Niagara Falls.

Frederick W. Stuart, executive secretary to the president of William Filene's Sons Co., has resigned to go to Germany as general manager of the German interests of the Goodyear Tire & Rubber Co. Mr. Stuart is a graduate of Harvard, class of 1912.

George E. Pell, manager of Lavins American & Asiatic Co.'s rubber department, was in New York last month.

New Jersey

While some of the rubber manufacturing plants in New Jersey report conditions as being good, others say that business is beginning to slacken up a little. Tire and tube manufacturers announce there has been an increase in production during the past month. The output of heels and soles continues good and the outlook for these products is very bright. Production of brake lining and other automotive parts is beginning to drop a little. The volume of mechanical rubber goods remains the same.

The Thermoid Rubber Co., Trenton, New Jersey, announces that business is not as brisk as it was during the summer months and each department shows a decrease in output. One of the officials said that a falling off of business was to be expected at this time of the year.

The Essex Rubber Co., Trenton, New Jersey, reports that business has been very good for the past six months and that the prospects for the fall and winter months are bright. Each department is operating to capacity. The output of soles and heels has increased.

The Combination Rubber Co., Trenton, New Jersey, announces that there has been an increase in the manufacture of tires and tubes during the past month, indicating that the tire outlook for the fall is to be good. The same conditions exist at the plant of the Hamilton Rubber Manufacturing Co.

The Ajax Rubber Co., Trenton, New Jersey, has closed its plant and will in the future manufacture tires and tubes at Racine, Wisconsin. More than 1,000 hands were thrown out of employment by the closing of the mill. William W. McMahan, vice president and general manager of the Trenton plant, will leave shortly for Racine. The Trenton plant was established some years ago and was known as the Grieb Rubber Co. Later it was purchased by the Ajax interests. The company at one time employed more than 1,100 hands and had a weekly payroll of about $25,000. Mr. McMahan says that the Trenton plant will not be dismantled, but will be held in readiness in case it is needed again.

The Zee Zee Rubber Co., Yardville, New Jersey, which went into the hands of a receiver more than six years ago, is still tied up in litigation. Harry Klag, Jr., receiver, announces that he expects to wind up the affairs of the company shortly. Claims against the company aggregate more than $400,000. One Trenton tire dealer holds a claim of about $100,000 for failure to deliver tires and tubes during the war.

Richard R. Rogers, formerly head of the Rogers Rubber Co., Trenton, New Jersey, has resigned his position with the rubber department of the Hollingshead Co., Camden, New Jersey, and is now affiliated with the Murray Rubber Co., Trenton, New Jersey.

Mr. and Mrs. E. T. Comly and family have returned from a long motor trip through the southern states. Mr. Comly is secretary of the Acme Rubber Manufacturing Co., Trenton, New Jersey.

The Luzerne Rubber Co., Trenton, New Jersey, announces that business shows some improvement over last month. The company, which manufactures hard rubber goods exclusively, had experienced a rather dull business during the late summer.

William C. Ehrenfeld, former president and general manager of the Dural Rubber Corp., Flemington, New Jersey, has recently severed his connection with that company. Mr. Ehrenfeld has not yet announced his plans for the future.

Overman Cushion Tire Co., Belleville, New Jersey, is now in regular production on truck and bus pneumatic and large size balloon tires. The company has long been successful in manufacturing solid tires and more recently entered the pneumatic field. M. C. Overman is president; J. Gill, treasurer and secretary; R. S. Hoag, purchasing agent; E. Nelson, factory manager, and G. Nelson, factory superintendent.

Robert J. Stokes, president of the Thermoid Rubber Co., Trenton, New Jersey, has returned from an extensive trip through South America.

The Reliance Rubber Corp., Keyport, New Jersey, is planning to materially increase its production of rubber supplies for the wholesale plumbers' supply houses and hardware dealers. J. A. MacEwan was recently elected president of the company upon the retirement of P. N. Furber, who still remains a director. Mr. MacEwan had been vice president and general manager for ten years and will still remain in active charge of all the affairs of the company. A $60,000 increase in capital stock of the company has been issued as preferred shares, the entire amount paid for in cash by the former president, P. N. Furber.

L. Albert & Son, Trenton, New Jersey, has purchased from Abraham Jellin, the plant of the former United & Globe Rubber Co. The machinery and equipment will be dismantled and the land and buildings offered for sale.

The Puritan Rubber Manufacturing Co., Trenton, New Jersey, manufacturer of Amtico marbleized rubber tile, stair treads, molded and perforated mats, is operating day and night. New buildings are being erected to take care of the demand for these products.

The Chieftain Rubber Co., Trenton, New Jersey, has been incorporated with 100 shares no par value to manufacture tires and tubes. The office of the concern will be at the office of the Murray Rubber Co., Trenton. The incorporators are Harvey N. Nason, Albert M. Alexander, Howard M. Stoner and Howard A. Landerbock, all officials of the Murray Rubber Co.

DE LASKI & THROPP-MURRAY TIRE SUIT

The United States Circuit Court of Appeals at Philadelphia has set aside the decision in favor of the De Laski & Thropp Circular Woven Tire Co., Trenton, New Jersey, against the Murray Rubber Co., of the same place. The award of profits is also set aside. The De Laski & Thropp Co., holders of an alleged patent on a tire making machine, was awarded a verdict by Judge Bodine in the Federal Court at Trenton against the Murray company. The Murray suit was regarded as a test case.

Judge Victor B. Wooley, of Wilmington, Delaware, wrote the Circuit Court decision, which was based on grounds that claims made on the patent involved in the suit were held to be invalid. When the favorable verdict was returned by Judge Bodine, who heard the case without a jury, plans were made to start similar suits against the leading tire manufacturers of the United States and Europe.

The suit charged the Murray company with making and using without license a tire making machine that contained devices incorporated in a machine patented by De Laski & Thropp, Trenton inventors. The device involved formed fabric around and along the bead of tires. The Murray company's defense was that the device had been in use prior to the time De Laski & Thropp secured the patent. Judge Bodine's decision prohibited the further use of the tire machine and ordered the defendant to give an accounting and surrender to the plaintiff all profits derived from the alleged infringement. The decision of the Circuit Court will be appealed to the United States Supreme Court.

Connecticut

Yale Tire & Rubber Co., New Haven, Connecticut, states that tire and tube production continues satisfactory and that business is expected to continue good throughout the winter. The company officers are: J. E. Hubinger, president; George P. Smith, treasurer; M. Leon Smith, secretary; Charles Murdock, vice president and general manager and W. B. Farquahrson, superintendent.

Armstrong Rubber Co., New Haven, Connecticut, reports good business so far this year and it is expected to continue so during the balance of the year. The factory is operating two shifts. The officers of the company are: George Armstrong, president and treasurer; James A. Walsh, secretary and factory manager and Fred Machlin, sales manager.

Seamless Rubber Co., New Haven, Connecticut, reports all manufacturing departments running to capacity except the play ball department which is somewhat slack at this time due to the off season for this article. The company manufactures druggists' sundries, play balls and rubber novelties and it is reported that sales for hot water bottles alone, during the past year, were in excess of a million dollars. James R. Caldwell is factory manager and R. A. Sanders, mechanical superintendent.

Norwalk Tire & Rubber Co., Norwalk, Connecticut, advises that sales of the recently announced 6, 7, 8 and 9-inch special heavy duty truck and bus tires are exceptionally heavy. August of this year showed the largest sales since the organization of the company, which manufactures solid and pneumatic tires and tubes. The officers are: W. B. Miller, president; J. N. Cieri, treasurer and secretary; J. F. Dougherty, purchasing agent and L. P. Arnold, factory manager.

A DECREASE OF 38 PER CENT IN VOLUME and 35 per cent in value has been noted in our exports of rubber hose to Chile, strong competition being experienced with Great Britain and Germany. The largest users of the hose are the wine industry and chemical plants.

WHEN A GREAT AMERICAN CIGAR COMPANY was formed by a merger it took over 152 brands. Now it has but five and makes more money than ever. That should be the experience, too, of the rubber industry when it eliminates the scores of unnecessary tire sizes; and it is a relief to note that a move has recently been made toward getting rid of that "wart upon business."

One Hundred and Twenty-fifth Anniversary of E. I. du Pont de Nemours & Co.

The history of the growth of the du Pont company is synonymous with the history of the growth of the nation, to which it has supplied, directly or indirectly, many essential products making national growth possible.

Eleuthère Irénée du Pont, founder of the company, becoming convinced while on a hunting expedition, that a powder plant built and managed on the plan of the French Government Works could produce a superior product and that a real business opportunity lay before him, consulted his friend, President Thomas Jefferson, who gave him encouragement on learning of his plans. He secured financial support from his friends, returned to France, purchased the needed machinery and built the first du Pont powder mill.

From its modest beginning along the banks of the Brandywine Creek, near Wilmington, Delaware, in 1802, to its present huge proportions with its numerous subsidiary companies operating in special fields, the company has grown and developed its resources largely because its products have been useful products, honestly made and sold.

For many years explosives were the only product manufactured, but as the business grew and the logical interests of the company broadened and ramified, du Pont became active in the development of applied chemistry and subsequently enlarged its activities to include the production of a wide variety of chemically related products.

In 1916, in order to offer to the automobile trade a complete line of rubber coated fabric, the du Pont company purchased the Fairfield Rubber Co., Fairfield, Connecticut. The origin of the Fairfield company goes back to 1879 when the company was organized to manufacture rubber clothing and carriage cloth. At Fairfield a service division functions and du Pont chemists are constantly developing new materials for the needs of the industry, supplying manufacturers with a wide variety of coated fabrics for their ever-changing requirements.

PORTO RICO'S TIRE IMPORTS

During the first five months of the present year Porto Rico has imported from the United States 24,747 automobile casings, value $275,377; 18,961 inner tubes, value $33,315; and 2,134 solid tires, value $47,494. Imports also of other casings, tires and tubes numbered 3,756, value $5,425.

Southern

The Bibb Manufacturing Co., Macon, Georgia, at its annual meeting elected E. W. Stetson a director and member of the executive committee in place of E. T. Comer, who died during the year. William D. Anderson was elected president and chairman of the board; James H. Porter, executive vice president; A. A. Drake, Jr., secretary and treasurer; and C. C. Hertwig, assistant secretary and assistant treasurer.

The J. L. Carroll Co., Atlanta, Georgia, has appointed William M. Todd general manager, effective September 1, 1927. Mr. Todd, who was formerly employed as city salesman for the company, is president of the Atlanta Tire Dealers' Association, and vice president of the Atlanta Retail Merchants' Association. The Carroll company, of which John T. Carroll is president, distributes Firestone tires and Exide batteries.

The F. J. Mire Battery Service, 800 Baronne street, New Orleans, Louisiana, is one of the most progressive dealers in the south. The company distributes Cooper tires and batteries and is enjoying a constantly increasing business.

De Lion Tire & Rubber Co., Baltimore, Maryland, reports that business has been very good with the plant producing 700 to 1,000 casings per day. F. G. Kennedy is factory manager.

F. G. Schenuit Rubber Co., Baltimore, Maryland, has experienced no slump in orders and the factory at Woodbury, Maryland, is running to capacity. The company manufactures tires and tubes, specializing in the larger sizes. F. G. Schenuit is president; Louis Schmidt, factory manager and W. H. Ramsthaler, plant engineer.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, has appointed William Richter general manager of the paint, lacquer and chemicals department. Fabrikoid and rubber products are included in this department.

HYGIENISTS CLAIM THAT THEY ARE helping folks more than ever to keep undertakers at bay; but may not anti-oxidant makers say that they, too, help to lengthen life? At least they are making it harder for junkmen to get tire carcasses.

OIL DEVELOPMENTS IN VENEZUELA MAKE that country one of our leading markets for rubber hose, its purchases having been increased by 92 per cent in volume and 69 per cent in value.

Midwest

J. M. Dawson has resigned from Wishnick-Tumpeer, Inc., 251 Front street, New York, N. Y., and is now located as chief chemist with the George B. Smith Chemical Works, Inc., Springfield, Illinois. Mr. Dawson has had a wide experience in the rubber allied industries, and in his new sphere will control and develop red, green and other organic pigments which are common to the rubber industries. Other specialties which have been developed by Mr. Dawson and used in the trade will also be marketed by the Smith organization. In addition to the already up to date chemical laboratory, the company, under Mr. Dawson's direction, is installing a very complete physical and service laboratory for the convenience of the trade.

H. R. Harris, 1123 Metropolitan Life Building, Minneapolis, Minnesota, has been appointed representative of The Falk Corp., Milwaukee, Wisconsin, manufacturer of herringbone gears, speed reducers and flexible couplings. Mr. Harris will cover the state of Minnesota and also Douglas County, Wisconsin.

The Gates Rubber Co., Denver, Colorado, contest offering a free trip to Denver and tours through the Rocky Mountains to the high men in Vulco and Congress tire sales, ended October 1. The thirty winners spent the week October 10-16 as guests of the company, and were entertained at banquets and many delightful tours. Beside the winners of the trip, about thirty more won a seventeen-jewel white gold watch and chain.

Surgical Rubber Works, Inc., Chicago, Illinois, has been adjudicated bankrupt and Harry A. Parkin appointed referee.

FORD COMPANY FORMED TO GROW RUBBER IN BRAZIL

After many conflicting rumors regarding Henry Ford's plans for the production of rubber in Brazil, formal anouncement has been made by Edsel Ford, according to the press, confirming the report of the forming of the Ford Industrial Expansion Co., conducted by Henry and Edsel Ford and other persons prominent in the Ford Motor Co., and which is capitalized at $100,000,000.

The company has acquired, it is said, a concession of from 3,000,000 *to* 4,000,000 *acres in the Amazon Valley, one of the conditions of the grant being that a certain amount of acreage is to be planted to rubber each year. The land is situated on the Tapajos river, with the River of Doubt to the west and the Xingu river to the east. Settlements are to be established with steamships of the Ford fleet to make regular trips to the district. It is also reported that airplane communication between Detroit and the plantations is contemplated.*

Mr. Ford is credited with the belief that enough rubber can be produced to supply the tire and other automobile needs of the Ford company.

The Gillette Rubber Co., Eau Claire, Wisconsin, is making a rubber skid chain under a contract with Skid Grips, Inc., 100 West Monroe street, Chicago, Illinois. Excellent business is reported and production is now in excess of 25,000 chains per day. The officers of Skid Grip, Inc., are B. H. Innes-Brown, president; D. M. Weigel, vice president; William R. Crawford, Jr., secretary; and R. W. Hutchens, treasurer.

A. J. Dornself, division manager in St. Louis for the Murray Rubber Co., Trenton, New Jersey, has been promoted to division manager for the western division and will have headquarters in St. Louis and Chicago.

Pennsylvania

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, at a meeting held October 12, 1927, elected Everett Thorpe a director and vice president. At the same meeting, the board accepted the resignation of Dudley M. Mason, who has been general manager of the company for the past six months.

The Philadelphia Rubber Works Co., Akron, Ohio, has moved the office formerly located at the Land Title Building, Philadelphia, to the plant at Oaks, Montgomery County, Pennsylvania.

The Quaker City Rubber Co., Wissinoming, Pennsylvania, reports the resignation of W. J. Winch, for some time past, factory manager. W. L. Burgess, formerly of the Converse Tire Co., has been made manager of the tire department with R. C. Ridge, factory superintendent. G. A. Kiessele is purchasing agent. The company has recently installed new tire manufacturing equipment in order to increase production.

The Continental Rubber Works, Erie, Pennsylvania, has purchased the plant of the Vulcan Rubber Co., and plans to use it as an auxiliary plant. The property consists of 7½ acres of land, together with modern buildings and machinery.

Ray A. Likley has resigned as assistant auditor of the Pennsylvania Rubber Co., Jeannette, Pennsylvania. Mr. Likley has as yet made no announcement of his future plans.

AMERICAN RUBBER HOSE ENCOUNTERS competition in Brazil from the local industry and Germany, both of which undersell, because of lower quality, the American product.

A BATTERY OF UTILITY INNER TUBE MOLD VULCANIZERS IN THE GILLETTE RUBBER CO., EAU CLAIRE, WISCONSIN

N. T. D. A. CONVENTION

Complete arrangements have been made for the Eighth Annual Convention of the National Tire Dealers' Association to be held at Louisville, Kentucky, November 14-17, 1927.

The convention headquarters will be the Brown Hotel and the official opening will be on the fifteenth. A banquet is scheduled for the evening of the sixteenth.

A record attendance is expected and strong hopes are held for ideal weather conditions. Louisville, it is said, offers the most pleasant and desirable climate at this time of the year.

Pacific Coast

General trade conditions on the Pacific Coast have shown a marked improvement during the past few weeks, according to mercantile and bank reports, the change for the better being especially notable in the Northwest and due in a large measure to an immense wheat production as well as the harvesting of other big crops. One of the first industries to feel the benefit has been the automobile industry, and following close upon it has been the tire industry. Coast manufacturers of casings and tubes report substantial increases of late, and the gain is well shared by midwest and eastern concerns. It has been remarked, however, that buyers of many lines of mechanical rubber goods are conducting their business on more conservative lines in 1927 than in 1926, with the result that they are not stocking goods much ahead of their requirements, and consumers are also said to be much more deliberate than formerly in buying. Oil and mining enterprises are showing increasing activity, and building operations continue to be good with a particularly large total in the Southwest.

United States Rubber Co. noted a marked improvement in business at all its branches during the past month. Pacific Coast Division Manager J. B. Brady spent the fore part of October in conference with executives at the home office in New York. Edward Abranson, manager of the automotive department in Cleveland, Ohio, has been visiting Coast branches. H. B. Chandlee, manager of mechanicals at San Francisco, has been conferring in Los Angeles with Branch Manager J. B. Magee, the latter having returned from a visit to C. B. Coville in San Diego and to W. T. Joplin in Phoenix, sub-branch managers.

W. J. Voit Rubber Co., at its new factory, 1604 East 26th street, Los Angeles, California, is installing a 60-inch mill and a 60-inch 3-roll calender with other machinery. The company is very busy making a new type of 13-inch sport ball made of 3-sheet laminated tube stock formed in 2-section aluminum molds, and fitted with a unique patented valve. It is also making inflatable cushions with a newly designed cord fabric valve reinforcement, besides retread stock, etc.

Huntington Rubber Mills, Macadam and Nevada streets, Portland, Oregon, according to President Harry Huntington, are operating twenty-four hours a day on heels, soling, and various rubber specialties. The management has not been changed for several years and sales have been steadily increasing not only in the coast territory but also well into the Midwest.

Barker Brothers Co., Los Angeles department store, has been awarded a contract for a minimum of 15,000 square feet of rubber tiling at approximately 60 cents a foot for the new 28-story city hall.

Goodyear Tire & Rubber Co. of California announces the reappointment of J. X. Kennelley as advertising manager at its Los Angeles plant. Since leaving the company four years ago Mr. Kennelley has been an executive of two large automotive advertising concerns on the Coast. E. L. Falls, who has been filling the position, will be associated with him as field representative of the advertising department. H. E. Blythe, vice president and production superintendent; R. J. Brady, manager purchasing department; J. P. Heaney, superintendent textile mills; and H. K. Barron, division superintendent, have just returned from an interplant and production conference at the parent Goodyear plant at Akron; and many branch managers and sales executives from the coast territory have gone there to take part in a sales conference. Tire production at the Los Angeles factory has again risen to an average of 6,300 daily with about 6,000 tubes.

California Firestone Factory

California Firestone Tire & Rubber Co.'s new plant at Manchester avenue and Alameda street, Los Angeles, will, it is said, be in production by May of next year. C. A. Meyers, vice president in charge of engineering, left Akron late in October with detailed plans for construction, and on his arrival, it was stated, work would be greatly expedited. Meanwhile the big tract is being put in readiness, and a complete street laid out and improved. The plans include a main factory part one and two-story, 380 by 425 feet; a four story warehouse 100 by 380; a two-story office building 260 by 50, with a connecting wing of 40 by 40 feet to the main building; a mechanical building 100 by 80, water tank and tower and three reservoirs; and a powerhouse 113 by 103 feet, the contract for the latter having been awarded to the Stone & Webster Co. The officers of the new company are: President, Harvey S. Firestone; secretary, L. T. Lytle; treasurer, E. A. Oberlin, who, with L. R. Jackson, are the directors.

The B. F. Goodrich Co. has entered upon a very intensive advertising campaign on the Coast, one feature of which is a striking window display for drug stores that ties up with a scenic display for selling Silvertown tires. This will be followed up with mail sales letters, circulars, souvenirs, etc., and educational booklets for drug clerks. R. J. Wark, of Langley & Michaels Co., San Francisco, lately won a trip-to-Akron prize offered by the Goodrich company for leading in sales of druggists' sundries, wholesale.

Pioneer Rubber Mills of San Francisco recently closed one of the largest single orders for 2½-inch double cotton-jacketed fire hose on record, 100,000 feet for the city of Los Angeles. The mills at Pittsburg, Contra Costa County, California, are running to capacity on not only various kinds of hose but also belting, battery jars, and general mechanicals, the market for which is being constantly extended not only in the United States, but also in Europe, South America, and the Orient. The mills have long produced the bulk of reclaimed rubber used on the Pacific Coast. President George S. Towne and Vice President H. R. Mansfield, who has charge of production, have recently been guests of J. D. Horan, who has long been manager of the Los Angeles branch.

Rubber Products Co. of America at Bates City near Redondo, California, which got a setback through faulty promotion, may be soon placed in an operating condition according to W. H. Taggart, secretary. The company's assets are chiefly a 225 by 65 foot building of steel and concrete and some modern milling machinery costing, it is stated, $105,000. A group of capitalists propose to take over the concern for $50,000 and to provide sufficient funds to place it on a going basis, and will await ratification of the plan by the stockholders. An alternative was to dispose of the plant for about $20,000 cash. The principal product, if the concern is again put on its feet, will be rubber floor covering, which, it is estimated, it can make for about 80 cents a square yard through using old rubber devulcanized at the plant through a process using neither acid nor alkali, and which is said to recover as high as 98 per cent pure rubber and practically all the fabric.

Golden State Rubber Mills, Inc., Los Angeles, California, according to President E. S. Long, is doing a good business in oil field supplies, general mechanicals, and retreading materials. Recently the company has been meeting with much success in marketing a new specialty, a practically pure rubber flush tank ball of unique design, and has sent a salesman to introduce it in the Midwest, with headquarters in Chicago.

Pacific Goodrich Rubber Company

Goodrich officials announce that the new plant under construction in Los Angeles will be completed in March, 1928. Manufacturing operations will start shortly thereafter, and as rapidly as possible its production schedule will be built up to 5,000 tires and 7,500 tubes daily. It will be operated as a complete fabricating unit, with machinery and equipment to handle raw materials the same as the Akron plant, but production will be exclusively tires and tubes. The building, designed along the lines of the old mission type of architecture, will be 2,000 feet long and one story high, housing approximately eleven acres of floor space.

S. B. Robertson, director of engineering at Goodrich since 1919, has been appointed vice president and general manager of the Pacific Goodrich Rubber Co., the subsidiary recently formed to direct the operations of the Los Angeles plant. Mr. Robertson will leave Akron January 1 to take up his new duties. Before joining Goodrich he was general superintendent of the Pennsylvania Railroad. He is a graduate of the Massachusetts Institute of Technology.

Century Tire Co. business on the Coast for the past three months was three times as much as for the same period a year ago, according to J. J. Pie, Pacific Coast manager, stationed at 1322 Santa Fe avenue, Los Angeles. He took charge July 15 last, having before that time been Mohawk manager in Chicago. The fact that the company is now turning out all the newer sizes has been, he says, of much advantage in increasing sales. Mr. Pie is said to hold the record among tire salesmen for driving automobiles, having covered more than 146,000 miles of territory in the short space of three years.

H. H. Boucher, newly appointed Southern California and Arizona manager for the Pennsylvania Rubber Co., has been in conference with company executives at the plant in Jeannette, Pennsylvania.

Frank S. Morgan Co., 2927 Newbury street, Berkeley, California, is preparing to manufacture a sponge rubber equipment for gold recovery to be used in deep placer mining, and on which he has lately been granted United States letters patent.

RUBBERMEN'S GOLF TOURNAMENT

Forty-five leaders in their line took part in the eighth annual Pacific Coast Mechanical Rubbermen's Golf Tournament at the Rancho Country Club at Culver City, near Los Angeles, October 3 and 4 and had a very enjoyable time. It being the custom to have a new head for the organization each year, President W. A. Corder of the Los Angeles Rubber & Asbestos Works resigned and Milton Sprague of the Plant Rubber & Asbestos Works of San Francisco was chosen in his place, with G. C. Spokesfield as secretary and treasurer, and W. A. Corder, J. B. Lippincott, William Endris, and Howard Middleton as vice presidents. The affair was concluded with a banquet.

Twenty-one trophies were donated by the following concerns: The Seattle Brass Co., L. P. Degen Belting Co., The B. F. Goodrich Rubber Co., Goodyear Rubber Co., W. C. Hendrie & Co., Quaker City Rubber Co., L. A. Rubber & Asbestos Works, National Magnesia Manufacturing Co., Pioneer Rubber Mills, Plant Rubber & Asbestos Works, E. M. Smith Co., United States Rubber Co., Boston Woven Hose & Rubber Co., Pacific Coast Rubber Co., Electric Hose & Rubber Co., H. G. Sperry Co., Southern Asbestos & Magnesia Co., Lippincott, Beall & Co.

The winners were: Qualifying round —H. Howard, J. D. Horan, M. Sprague, C. D. Clawson; championship flight—M. Winship, M. Sprague; first flight—M. L. Springer, H. Zelliff; second flight —F. E. Stringer, J. E. Nevins; defeated four championship flight—J. D. Horan, C. D. Clawson; ditto, first flight—M. Anderson, W. C. Hendrie; ditto, second flight—J. H. Best, H. Jensen; driving contest—W. C. Hendrie, W. Smith; putting contest—M. Winship, M. Anderson.

Master Tire Boot Manufacturing Co., Los Angeles, California, according to Manager Cary O'Steen, remarks an improvement lately in business. The interest of former President J. L. Shoup has been taken over by Mr. O'Steen, and the works removed from 1375 West Jefferson street to 6914 South Vermont avenue.

The United States Rubber Co. has assigned L. M. Simpson, Portland manager, as central manager of tire sales at Detroit, Michigan. John D. Ferris, Spokane and Butte manager, replaces Mr. Simpson, and D. W. Ort of Salt Lake, succeeds Mr. Ferris in Spokane. Harry M. Green of the mining sales department is made Salt Lake manager.

SENSATIONAL RUBBER PROFITS

Automotive Industries of New York publishes a small but rather startling item concerning the huge profits which the Dutch Government has made from its rubber estates. According to this notice, the figures relating to the government rubber estates show "that the automobile industry, using 84 per cent of the entire rubber output, paid an average of $0.456 per pound. The average 1926 cost of production was $0.09849 per pound, thus leaving the gross profit of $0.348 per pound, or 353 per cent!"

Now while costs and prices may be exactly as stated, nevertheless the item is misleading, as the paper has not considered the capital invested, nor the fact that investors in rubber plantations receive no returns whatever for at least seven years and frequently for longer. Again the paper says nothing about the area or output involved, leaving readers to infer that all the Dutch estates, for which the total 1927 output is estimated at 135,000 tons are involved, whereas the figures apply only to the government output of about 3,500 tons. Finally, it may be added that the cost of production is a very low one, not very usual on estates anywhere in the East, for which the average is, in fact, double the figure.

E. M. Smith Co., rubber manufacturer, Los Angeles, California, reports business unusually good. Last month exports of brake lining were over 350,000 feet, or about one-third of the total output, shipments being made to South America, Australia, Singapore, Java, and China chiefly. Last year the company had but one hydraulic press for brake lining, but now it has three large presses. It is also making considerable rubber belting, brake blocks for the northwest logging camps, and oil field supplies. Its subsidiary plant, the West Coast Asbestos Co. at Downey, California, is reported as doing double the business of a year ago.

Max Clouth, wife, and son Franz, of Cologne, Germany, were recent visitors at the home of Henry C. Pearson, editor of INDIA RUBBER WORLD, in Pasadena, California. Mr. Clouth owns two large rubber factories employing 1,800 men and is vice president of the German Rubber Manufacturers' Association. His father, who founded one of the factories, the Rheinische Gummi-Werke, in 1866, was also the author of a noted work, "Rubber, Gutta Percha and Balata."

Canada

The spring booking prices on garden and lawn hose which became effective October 10 show reductions of 11 to 17 per cent, according to size and thickness, from the quotations that were prevailing this year. Salesmen are now on the road soliciting orders at the new prices for next year. The reason for the decline is that markets are easier at present than when last season's prices were set. These new prices are available on orders booked until December 31, 1927, and delivery can be taken up until June 30, 1928, in place of May 31 as formerly. On account of the lateness of the summer season in the past four or five years manufacturers have extended their latest delivery date one month.

Despite the cotton crop reports of serious nature, rubber goods manufacturers have not changed prices and there is no immediate change contemplated. This market during the past year has been steady and business has been extraordinarily good in both tires and mechanical goods.

Canadian Government. There is every indication that the Federal Government will establish a Research Institute in Ottawa, Ontario, under the direction of the National Research Council, according to a statement made recently by Dr. R. F. Ruttan, Dean of the McGill University faculty of graduate studies and research.

Gregory Tire & Rubber, 1926, Ltd., Port Coquitlam, British Columbia, reports a very satisfactory condition of business. The factory is now working day and night to fill orders, as the demand for tires in Western Canada has been constantly increasing since the opening of the tourist season. While the company's principal market is still there, they are also entering the export market and have been making constant shipments to New Zealand and other countries.

National Motor Show of Eastern Canada, held under the auspices of the Montreal Automobile Trade Association, has selected as show dates January 21 to 28 inclusive, and the show will be staged in the spacious Motordome Building. Adelstan Levesque is the show manager.

Seiberling Rubber Co. of Canada, Ltd., Toronto, Ontario, having acquired an office and warehouse in Calgary, Alberta, has appointed the Western Rubber Co. of that city as dealer. Seiberling tires, tubes and druggists' sundries will be distributed throughout the province of Alberta from Calgary.

North British Rubber Co., Ltd., Edinburgh, Scotland, with Canadian branch at Toronto, Ontario, is bringing out a new golf ball for the spring trade of 1928.

Dominion Rubber Co., Ltd., St. Jerome, Quebec, was recently visited by executives of the Quebec Division, Canadian Manufacturers Association, including President W. S. Fallis. The St. Jerome plant manufactures tennis shoes such as Fleet-foot, and the fact that Helen Wills' tennis shoes were made there is a great tribute to the skill of Canadian rubber footwear manufacturers.

Goodyear Tire & Rubber Co. of Canada, Ltd. is operating its tire plant at New Toronto, Ontario, at capacity; the rubber goods plant at Bowmanville, Ontario, is also busy; while the cotton plant at St. Hyacinthe, Quebec, is able to supply only 50 per cent of the cotton used in the construction of tires and other goods. The capacity of the New Toronto plant is now 8,000 tires per day, compared with 3,000 tires in 1921. Goodyear Wingfoot rubber heels are being advertised in leading dailies from coast to coast in large sized impressive copy.

Guelph Rubber Products, Guelph, Ontario, has purchased the old Fountain House Hotel and is altering it for factory purposes.

Woodstock Rubber Co., Ltd., Woodstock, Ontario, has purchased the plant of the Karn Piano Co., Woodstock, and will manufacture rubber footwear. Production will start after alterations and installation of equipment, valued at $200,000, have been completed.

W. J. Anderson Manufacturing & Rubber Co., Ltd., London, Ontario, has made application to the Honorable The Secretary of State of Canada, for leave to surrender its charter.

Anderson Industries, Ltd., has been incorporated for the purpose of purchasing the assets and undertakings and assuming the liabilities of the W. J. Anderson Manufacturing & Rubber Co., Ltd., London, Ontario.

Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, owing to heavy traffic on the highways will discontinue the annual Dunlop bicycle road race. This event has been a sporting feature every year since 1894.

Ames Holden McCready Rubber Co., Ltd., has a novelty known as the women's Paree Raincoat which is sold in good volume to shoe retailers and particularly those in the smaller centers in Ontario.

Firestone Factory Addition

Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ontario, will erect a new plant addition which will increase floor space 157,000 square feet and manufacturing capacity by 40 per cent. The building will be completed by February 1, 1928, and the increased production facilities should be ready a month later. Present employes number 650 and about 300 more will be taken on when the new addition is ready. The large increase in plant capacity that will result is partly due to improved engineering and production methods in manufacturing and rearrangement of the method of passing the raw materials through to the finished product.

Northern Rubber Co., Ltd., Guelph, Ontario, features the Rainboot, an all-rubber low style boot which is shown in a number of colors and is meeting with much success.

Canadian Goodrich Co., Ltd., Kitchener, Ontario, is in production with the new Lo-N-Hi Zipper overshoe and anticipates a strong demand for this women's overshoe during the coming winter season.

J. W. Jordan, former auditor of the general accounting division of The B. F. Goodrich Co., has been appointed vice president and general manager of the Canadian Goodrich Co., Ltd., succeeding T. B. Tompkinson, who has been made comptroller of The B. F. Goodrich Co., at Akron, Ohio.

Exports of Tennis Shoes

During the month of August, 1927, 787,601 pairs of canvas rubber-soled shoes, valued at $526,077, were exported from Canada. This compares with 628,694 pairs, valued at $467,972 for August, 1926. The total for the 12 months ending August, 1927, was 5,496,443 pairs valued at $3,933,617, as against 4,568,958 pairs, valued at $3,511,056 for the preceding 12 months. It is interesting to note the countries to which the largest volume of these exports were shipped. The Argentine, in August, was the biggest customer, taking 472,624 pairs; New Zealand came next with imports of 125,444 pairs; United Kingdom took 33,180 pairs; British India, 24,200 pairs; British South Africa, 23,227 pairs; Australia 19,918 pairs; Chile, 13,567 pairs. Canadian rubber footwear exports found their way into a great many other countries in all parts of the globe, but in smaller quantities.

IT IS REPORTED THAT CONSIDERABLE PROGRESS in the development of synthetic rubber has been made by the German dye trust.

The Obituary Record

Tyer Credit Man

Harry H. Noyes for nearly forty years connected with the Tyer Rubber Co., Andover, Massachusetts, and for many years its credit manager and cashier, died September 29 in his sixtieth year. Although in poor health for some time, he had been at his place of business within the week.

Born in Andover he was graduated from Punchard school with the class of 1886. After attending Bryant & Stratton's commercial college in Boston, he entered the employ of the firm with which he remained until the time of his death. He was a member of the board of trustees of the Punchard school, vestryman at Christ church, cemetery trustee and sang for many years in the choir.

Mr. Noyes was married in 1896 to Mary A. Rhodes, who survives him. Besides his wife, he leaves a sister, Mrs. William McLean of New York City, and a brother, Frank V. Noyes of Arlington.

Funeral services were held at Christ Church on Sunday with the Reverend Charles W. Henry officiating, followed by the interment in the South Church cemetery.

Merchant, Financier and Manufacturer

The long and successful career of William Hezekiah Robinson, well known in Canadian business circles, was terminated by his recent death in his eightieth year at Granby, Quebec.

Mr. Robinson was born in Waterloo, Quebec, April 17, 1848. After a collegiate and military school education he began his business life in a general store in Waterloo in 1867. He bought out this business in 1870 and remained the head of the firm until 1874 when ill health compelled his resignation. Two years later he entered the service of the Eastern Townships Bank as accountant. His banking connections continued until 1908 during which time he established and managed successively several branch banks.

After his retirement from banking Mr. Robinson became interested as an executive in the Granby Consolidated Mining, Smelting & Power Co., Ltd., the Crow's Nest Pass Coal Co., and the Granby Printing & Publishing Co., Ltd. He was director of the Granby Rubber Co., Ltd., up to the time of its amalgamation with the Canadian Consolidated Rubber Co., Ltd.

In 1915 he became a director of the Dominion Rubber System, and later succeeded to its presidency. Mr. Robinson was past master of Shefford Lodge, No. 52, A. F. A. M.

Akron Rubber Executive

The sudden death of David Austin Grubb on October 5, 1927, at his home in Akron, Ohio, was a severe shock to his wide circle of friends, who did not

D. A. Grubb

realize the seriousness of his condition. Mr. Grubb had been in poor health for about a year, and it is believed by his associates that his close application and long hours of work hastened his end.

Born in Akron, Ohio, on December 25, 1867, he was educated in the schools of Summit and Medina counties. When eighteen years of age he taught school and in his early twenties became salesman for the American Seating Co., of Grand Rapids, Michigan, later organizing, with four other business men, the Cleveland Seating Co. In 1916 he helped organize the India Tire & Rubber Co. of Akron, holding the position of secretary and sales manager. He severed his connections with the India company in November, 1924, and in the spring of 1925 became manager of the Star Rubber Co., from which he was forced to resign last winter because of ill-health. After a six months' rest, he launched the Grubb Rubber Co., Wadsworth, Ohio, to manufacture rubber novelties and tires.

Mr. Grubb was a member of the Fairlawn Country Club and a Mason. He is survived by a widow, Mrs. Deborah Grubb, four daughters and one son.

An industrious, ambitious man, Mr. Grubb owed his success to his keen insight into human nature and his intimate knowledge of the needs of the automobile trade.

President Rubber Exchange Clearing Association

Leopold Semon Bache, president of the Rubber Exchange Clearing Association, died during the rush hour on a subway train in New York, N. Y., on October 10, 1927. He had apparently been in excellent health when leaving his office and was on his way to his country home at Port Chester.

Mr. Bache was born in New York sixty-one years ago, and was one of the best known figures in the financial district. He was one of ten partners of J. S. Bache & Co.; a former president of the New York Cotton Exchange; president of the New York Coffee & Sugar Exchange; and vice president of the New York Casualty Co.

Funeral services were held on October 13 from the Bache home, 791 Park avenue. Mr. Bache is survived by a widow, two sons, one brother and four sisters.

Lambertville Salesman

B. H. Taylor, for many years connected with the Lambertville Rubber Co., Lambertville, New Jersey, died recently in a Trenton hospital after a long illness. Born 75 years ago on a farm at Frenchtown, New Jersey, he became associated with the Lambertville Rubber Co. when a young man, and was sent on the road as a salesman in New York state. He attained such success that he was made a general agent with a staff of salesmen under his direction, but retired from active business a few years ago and traveled extensively with Mrs. Taylor. One tour took them to Hawaii and Japan and they had recently visited California. Mr. Taylor was a director of the Amwell National Bank at Lambertville and was affiliated with the Masonic Fraternity. He was long a member of the Lambertville Presbyterian Church.

A Crude Rubber Veteran

Frederic H. Sanford, a member of H. A. Astlett & Co., 64 Water street, New York, N. Y. crude rubber importers, died after a short illness on October 17 at the age of 61 years.

Mr. Sanford was one of the oldest and best known men in the crude rubber industry having been connected for twenty years with Adelbert H. Alden & Co., Ltd., of Para and Manaos, Brazil. In 1914, he resigned from his position as manager of the Manaos branch of the former firm and for a while lived in retirement in Southern France and Switzerland. At the outbreak

of the war he returned to the United States in 1915 and a year later became a partner in the firm of H. A. Astlett & Co., well known New York importers of crude rubber.

Mr. Sanford was a man of sterling character who will long be remembered in the trade for his quiet disposition and loyalty to his many friends. He is survived by his widow and a son. Interment took place at Palmyra, New York.

Prominent in New England

The New England rubber trade lost one of its striking figures in the death of Frederick S. Carr, September 28, at his home in Chestnut Hill, Newton, Massachusetts. Mr. Carr was president and treasurer of the Carr Fastener Co., Cambridge, Massachusetts, maker of snap fasteners for the rubber footwear and clothing trades, as well as automobile topping, and was also president of the F. S. Carr Co., Framingham, manufacturer of rubberized fabrics.

Mr. Carr was born April 22, 1857, the son of Horatio F. and Ruth E. (Flanders) Carr. He was a great-great-great grandson of Major Samuel Carr of West-Newbury, who served with distinction during the entire revolutionary war.

He was a member of the First Church of Christ, Scientist, Boston, and of the Malden church, which he was active in establishing and promoting. He is survived by his wife, Mrs. Ida M. Carr; a son, Moses F. Carr, of Lexington, who was associated with his father in business and will probably succeed him in office; a daughter, Adelaide F. Carr, and five grandchildren.

FRENCH WEST AFRICA

While rubber exports from French West Africa showed an increase of 9 per cent in 1926, as compared with those for 1925, the figures for the first quarter of 1927 indicate that this increase will probably not be maintained for 1927, owing undoubtedly to the much lower prices prevailing at present.

Detailed statistics follow:

	1925 Long Tons	1926 Long Tons
Senegal	73	88
Guinea	1,332	1,238
Ivory Coast	304	518
Soudan	....	23
Totals	1,709	1,867

The rubber exports for the first three months of 1926 and 1927 were:

	1926 Long Tons	1927 Long Tons
Senegal	29	6
Guinea	811	479
Ivory Coast	320	150
Totals	1,160	635

Goodyear Plant 98 Per Cent American

The Goodyear Industrial Assembly which deals with the management on all employe problems consists of 60 members, 20 senators elected biennially and 40 representatives who hold office for one year. A primary election narrows the field of candidates down to the three receiving the highest number of votes in each of the 60 factory districts.

Biographies of the 120 primary winners, published just prior to the final election held recently, revealed the fact that only seven were born abroad, three being born in England, one in Ireland, one in Sweden, one in Switzerland and one in Nova Scotia. Of the remainder, 40, or one-third of the total, were born in the South, West Virginia furnishing 14, Kentucky seven, Alabama four, and Tennessee, Virginia, North Carolina, Mississippi, and Maryland furnishing three each.

Ohio, as was to be expected, furnished the largest number, with 33, most of these, however, having come from the farm and small towns of the state. Pennsylvania ran second with 22, the rest being scattered from among the eastern and midwest states.

President P. W. Litchfield, who gave the original impetus to the Assembly nine years ago when he was vice president and factory manager, as a means of contact between management and men, stated that the assembly candidates furnished a good cross section of the plant as a whole, in which 98 per cent are American born, or have become Americanized or in the process of naturalization.

"The industry has called for a high type of men and the management of the company has tried to keep the plant one that will attract the best type of American workmen," he said.

DURING THE FIRST EIGHT MONTHS OF 1927, 1,867 tons of rubber imported into the United States were cleared through Ohio, all since April when Akron was constituted a port of entry. In 1920 5,583 tons were cleared through the Ohio customs district; in 1921-1923 inclusive, no clearances were made through that district; in 1924, clearances amounted to 2 tons; in 1925, 75 tons; and in 1926, 671 tons.

RECLAIM USED IN CANADA

According to the annual report issued by the Dominion Bureau of Statistics on the rubber industry for 1926, Canadian rubber factories used 19,209 long tons of crude rubber and 7,308 long tons of reclaimed rubber, a ratio of 38 per cent reclaim to crude. The 1925 ratio of reclaim to crude was 28.5 per cent, the consumption for that period being 19,030 long tons of crude and 5,415 long tons of reclaimed rubber.

The ratio of reclaimed to crude rubber consumed in the United States was 37 per cent in 1925 and 45 per cent in 1926, this country producing relatively, to total output, larger quantities than Canada of such products in which reclaimed rubber finds its greatest use, such as mechanical rubber goods, rubber mats and matting, hard rubber goods and insulated wire.

SYNTHETIC RUBBER

The manufacture of synthetic rubber, according to press reports, will soon be started by the Synthetic Rubber Corp. of America, which plans the erection of three manufacturing plants located in New York, New Jersey and Connecticut.

John J. Owen is the inventor of the process by which he claims rubber goods are synthetically made of vegetable and gum compounds, chemically treated and vulcanized. Mr. Owen is a chemist and druggist, a graduate, it is said, of Boston College of Pharmacy and Johns Hopkins University. He claims that his product can be put on the market at less than one-third the cost of rubber; that it will be better than rubber itself, and that the manufacture will be speedier, as it can be turned out in 72 hours after receiving an order.

Carl Francis, vice president of Automatic Linker, Inc., is one of the sponsors, and has stated that the office of the Synthetic company will be located for the present at 152 West 42nd street, New York, N. Y.

FRESHENING RUBBER GOODS

Although modern compounding and manufacture have made rubber goods much less perishable than formerly, some old recipes for their care are still considerably used. Renewed resiliency is said to be imparted and bloom removed by steeping such wares in a 1-2 solution of ammonia and water; rubber belts made more flexible with raw linseed oil dressing; and oil removed from mats and other articles by applying a paste of water and pipe clay.

THE RAPSON TIRE CO., OF SYDNEY, Australia, expects to begin operations early in 1928, the initial output, it is stated, will be 3,500 tires per week.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
1010	Manufacturers of diaphragm sheet packing.
1011	Molded rubber bulb syringe.
1012	Cars for shoe lasts.
1013	Stamp and ink for marking cured rubber goods.
1014	Hard rubber croquet balls in assorted colors.
1015	Manufacturers of rubber parts for glass syringes.
1016	Extension ring which automatically comes into operation when pneumatic tire is deflated.
1017	Body belts.
1018	Stamp making machinery.
1019	Firms molding bakelite products.
1020	Machinery for making insulated wire.
1021	Rubber thread making machines.
1022	Machine for applying varnish to rubber footwear.
1023	Tennis shoes.
1024	Cement formulas.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country	Purchase or Agency
27,292	Auto and bicycle tires....	Hamburg, Germany....	Agency
27,424	High boots.....	Prague, Czechoslovakia.	Either
27,463	Men's composition belts..	Alexandria, Egypt.....	Agency
27,484	Cement for pneumatic bicycle tires	Geneva, Switzerland...	Purchase
27,493	Druggists' rubber sundries.	Montevideo, Uruguay..	Agency
27,494	Rubber waist belts.....	Geneva, Switzerland...	Agency
27,502	Druggists' rubber sundries.	Buenos Aires, Argentina	Agency
27,509	Packings and valves for machinery	Toronto, Canada.....	Agency
27,532	Automobile and repair kits tires	Prague, Czechoslovakia.	Either
27,555	Footwear, pharmaceutical rubber goods, and specialty products	Vienna, Austria.....	Agency
27,603	Rubber coated cloth for raincoats	Sydney, Australia.....	Both
27,618	Lightweight belts for industrial purposes.....	Dresden, Germany.....	Purchase
27,621	All kinds of rubber bandages	Riga, Latvia.....	Both
27,622	Riding boots, bright finish, narrow upper; and canvas shoes, rubber soled.	Copenhagen, Denmark..	Purchase
27,623	Industrial rubber goods..	Bombay, India.....	Both
27,624	Automobile tires and accessories	Vienna, Austria.....	Agency
27,647	Rubber advertising novelties	Valparaiso, Chile.....	Purchase
27,652	Rubber toys.....	Caracas, Venezuela....	Both
27,659	Tennis balls.....	Cape Town, So. Africa.	Agency
27,660	Golf and tennis balls.....	Cape Town, So. Africa.	Agency
27,729	Hot water bottles, fountain syringes, nipples, gloves and other rubber goods	Milan, Italy.....	Both
27,730	Tires, casings and tubes and solid tires for trucks	Aleppo, Syria.....	Agency
27,731	Automobile tires, packings, washers and valves....	Bucharest, Rumania...	Agency
27,732	Automobile tires.....	Bucharest, Rumania...	Agency

CLAIMS TIRE ECONOMY RECORD

The owner of a western delivery service operating a fleet of 35 heavy trucks, having standardized vehicles, gas, oil, accessories, etc., took up tires. He tried nearly every kind offered, but could not get his tire cost below 52 cents a day, 46 cents for new casings and 6 cents for repairs. Finally using a nationally known high grade tire solely he brought the daily cost down to 39 cents, or 36 and 3, respectively. Hence he is convinced that the best is the cheapest in the long run, and he also believes that he has the economy record.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circular
1632....	Rubber Sundries and Specialties Trade Opportunity.
1633....	Canadian Tire Exports During July, 1927.
1634....	Conferences with American Trade Commissioner to South Africa.
1635....	Tire Exporters' Weekly News Letter.
1636....	Mechanical Rubber Goods Exporters' Monthly News Letter.
1637....	Rubber Invoiced to the United States During the Week Ended September 17, 1927.
1638....	Crude Rubber News Letter.
1639....	August Imports of Rubber Tires Into the United States.
1640....	August Imports of Golf Balls Into the United States.
1641....	Rubber Sundries and Specialties News Letter.
1642....	Tire Exporters' Weekly News Letter.
1643....	Rubber Invoiced to the United States During the Week Ended September 24, 1927.
1644....	Crude Rubber Reexports from the United States; Month of August, 1927.
1645....	Crude Rubber News Letter.
1646....	Canadian Tire Exports During August, 1927.
1647....	Rubber Division Special Circulars, Third Quarter of 1927.
1648....	Rubber Footwear Exporters' Monthly News Letter.
1649....	Tire Exporters' Weekly News Letter.
1650....	Rubber Invoiced to the United States During the Week Ended October 1, 1927.
1651....	Crude Rubber News Letter.
1653....	French Rubber Tire Exports During July and August, 1927.
1654....	French Rubber Footwear Exports During July and August, 1927.
1655....	British Exports of Automobile Casings During August, 1927.
1656....	British Exports of Rubber Footwear During August, 1927.
1657....	Tire Exporters' Weekly News Letter.
1658....	Rubber Invoiced to the United States During the Week Ended October 8, 1927.
1659....	Preliminary Statistics of United States Crude Rubber Imports, September, 1927.

VENEER CASES

The expected increase in the total production of estate rubber in East Coast of Sumatra, during the next five or six years, will bring a corresponding increase in demands for veneer cases. This increase is based upon statistics for areas now planted with rubber trees but not yet in bearing which will boost total production to between 80,000 and 90,000 metric tons. A further demand is likely when local remilling facilities handle native rubber which is at present shipped wet to Singapore without being packed in cases.

STATEMENT OF INDIA RUBBER WORLD

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of the India Rubber World, published monthly at New York, N. Y., for Oct. 1, 1927.

State of New York } ss.:
County of New York }

Before me, a Notary Public in and for the state and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of the India Rubber World, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, The India Rubber Publishing Co., 420 Lexington avenue, New York, N. Y.; Editor, Henry C. Pearson, 420 Lexington avenue, New York, N. Y.; Managing Editor, William M. Morse, 420 Lexington avenue, New York, N. Y.; Business Manager, E. M. Hoag, 420 Lexington avenue, New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) The India Rubber Publishing Co., Henry C. Pearson; Edward Lyman Bill, Inc., Caroline L. Bill, Edward Lyman Bill, Raymond Bill, Randolph Brown, H. R. Brown, Carleton Chace, Wm. A. Low, Lee Robinson, J. B. Spillane, B. B. Wilson—all located at 420 Lexington avenue, New York, N. Y.; Edward Van Harlingen, 209 South State street, Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. Hoag, Business Manager.

Sworn to and subscribed before me this 16th day of September, 1927.

[seal] Harry Hoag, Notary Public.

N. Y. County Clerk's No. 353. N. Y. County Register's No. 9195.

(My commission expires March 30, 1929.)

The Rubber Industry in Europe

Great Britain

Seldom has the crude rubber market been in such a state of suspense as it is now on the eve of the fifth restriction year. The question on every tongue is what, if any, steps the government is going to take to insure the more efficient working of restriction in the coming year, and repeated inquiries have been directed to the Colonial Office to ascertain whether any advance announcement would be made in this respect. But it seems that no announcement will be made until October 31, for the new restriction year commencing November 1. From this it is deduced that no drastic changes in the scheme are likely, although it is supposed that smuggling will be very severely dealt with and that assessments will come in for closer scrutiny than in the past. Smuggling, over-assessment and unused coupons, are now generally recognized to be chiefly responsible for the failure of the scheme to bring about the desired results during the past year, in fact more than one irate shareholder has bluntly characterized the restriction scheme as a farce.

Remedial Measures

While even decided prorestrictionists are in favor of a tightening up of restriction to be brought about by reassessments of estates on a fairer basis and strict measures against smuggling, not a few suggest that not only should estates be reassessed on the basis of their actual production during the nine months of 1926 when 100 per cent export was allowed, but also that coupons should be ruled valid only for the quarter over which they are issued, and that the minimum exportable of 60 per cent should be lowered to at least 50 per cent, and that immediately. This opinion is also given by A. W. Still, formerly editor of the *Straits Times*, in an article recently published in the *Investors' Review*. With regard to smuggling, Mr. Still agrees that it is a serious factor, but at the same time warns against the attitude adopted by a number of producers who can see no fault in the administration of restriction and would lay the blame for the ineffectual working of the scheme solely to smuggling. Estate owners, he says, will best serve their own purposes by ceasing to strive for standards in excess of their producing capacity.

Mention must also be made of a rather persistent opinion in some quarters to the effect that the government intends to let prices down gradually and is not primarily interested in the salvation of restriction. We give this opinion for what it is worth.

Footwear Campaign

Sir Charles Higham, who has become known to Americans in connection with his work in popularizing India tea in America, has been entrusted with the arrangements for an intensive campaign to spread the use of rubber footwear, and more especially of "Wellingtons," or rubber knee boots, and this fall ten thousand pounds sterling will be spent in advertising this type of rubber footwear. Those behind this boost are the Rubber Growers' Association and a number of manufacturing concerns, including: Dominion Rubber Co., Ltd.; Gutta Percha & Rubber Co., (London) Ltd.; Hood Rubber Co., Ltd.; Kaufman Rubber Co., Ltd.; J. Langdon & Sons, Ltd.; Liverpool Rubber Co., Ltd.; North British Rubber Co., Ltd.; Victoria Rubber Co., Ltd.; and F. Wigley & Co., Ltd. All of the £10,000 will go toward advertising and "Wear Wellingtons" advertisements will appear regularly in eight different papers. The scheme is to create a general demand, therefore no special makes will be mentioned, each maker selling his own product on its merit.

Binney & Smith Merger With Morris Ashby, Ltd.

Of mutual advantage to both companies has been the recent amalgamation of Binney & Smith and Morris Ashby, Ltd., the merger resulting in a wider field of sales activities and increased facilities for useful service. The company will be known as Binney & Smith & Ashby, Ltd., with offices at 110 Cannon street, London, E. C. 4, England.

A particularly happy selection as representative for the company in England, is that of Alan Speedy, AM.I.Chem.E., F.I.R.I., who has been elected to the board of directors, and will have complete charge of both sales and technical service connected with supplies to the rubber trade. Mr. Speedy was formerly with the India Rubber, Gutta Percha & Telegraph Works Co., Ltd., Silvertown, for over six years, and for a similar period was with A. G. Spalding & Brothers in their European and American factories. His connection for the past fourteen years with the rubber industry has given him manufacturing experience both in America and Europe where he has made many friends, who wish him every success in his new venture.

Mr. Speedy is a member of the Council of the Institution of the Rubber Industry, and of the London Section Committee.

The Institution of the Rubber Industry

On October 12, the fourth annual general meeting of the London and District Section of the Institution of the Rubber Industry was held at the Engineers' Club, London. The committee consists of: D. A. S. Porteous, chairman; S. C. Mote, vice chairman; C. H. Birkitt, honorary secretary; W. N. Burbridge, W. S. Davey, T. R. Dawson, J. Entwistle, A. L. Fairbank, E. B. Kay, J. MacWilliam, J. N. Nicholls, H. Standring, A. Speedy, H. Thom, and George E. Watson. Four of these gentlemen, Messrs. Burbridge, Entwistle, MacWilliam, and Speedy, retire from the committee and nominations are to be made to fill the vacancies.

The Gow Lectures

It is learned from Dr. Deller, Academic Registrar of the University of London, that the Gow course of six lectures on "The Colloid Chemistry of the Rubber Industry," will be given by Dr. Ernest A. Hauser, at University College, Gower street, London, W. C., on November 7, 9, 11, 14, 16 and 18. The syllabus of the lectures is as follows:

1. Historical introduction: Rubber latex and its colloidal chemistry.

2. Tapping of latex, its coagulation, evaporation, concentration and preservation.

3. The structure of rubber, Joule effect, density of rubber, racking, etc.

4. The process of mastication, calendering, dissolution of crude rubber and the preparation of rubber mixes, with special reference to the problem of compounding ingredients.

5. The problem of vulcanization.

6. Future prospects, the synthesis of rubber special problems from the point of view of the plantation and rubber manufacturing industry.

Shipping and Engineering Exhibition

The many uses for rubber in the shipping and engineering lines were amply demonstrated at the Shipping & Engineering Exhibition held at Olympia, London, in September last. One of the features of the exhibition was the "S. S. Caoutchouc," representing the cabins and decks of a ship, and put on view by the Rubber Growers'

Association. The floors of the cabins were covered with rubber tiling of plain and sponge rubber. The bunks were fitted with the Moseley Float-on-Air patent pneumatic mattresses, which are not only extremely comfortable and durable, but which, it is claimed, can also be used as most efficient life preservers in case of shipwreck. Incidentally, the firm also produces Float-on-Air cushions which are especially popular for use on yachts, in addition to a variety of other articles used on ships, including a new sponge rubber filled hawser. The Rubber Growers' Association also exhibited a complete classified arrangement of rubber goods for all purposes.

Shoe and Leather Fair

The Shoe and Leather Fair was held at the Agricultural Hall, London, from October 3 to 7, and the rubber footwear industry was particularly well represented, as thirty well-known firms producing rubber footwear or accessories participated. A number of firms exhibited their styles of Wellington rubber boots, which as has already been stated, is being widely advertised, in line with the propaganda work of the Rubber Growers' Association in this direction. This body, as was to be expected, will also feature rubber Wellingtons and overshoes for winter wear, beside crepe soles, at the fair, thus giving prominence to two publicity campaigns, the one for Wellingtons and the other for crepe soles.

Bezencenet Resigns

Crepe Sole Rubber, Ltd., 24-25 Great Tower street, London, E. C. 3, England, has announced the resignation of Maurice Steinman-Bezencenet as joint managing director dealing with exports. Mr. Bezencenet still retains an interest in the firm and will act in an advisory capacity.

GUTTA PERCHA VS. RUBBER CORE GOLF BALL

An interesting game was recently staged at Woking, England, in which leading amateur and professional golfers took part. One team used the old fashioned gutta percha ball and defeated a team of handicapped players using the modern rubber cored ball. It was estimated that the modern ball gave an advantage of four strokes a round, and that it was twenty per cent longer in flight.

THE UNITED KINGDOM EXPORTED DURING the first half of 1927, according to the Department of Commerce, 1,357,224 pairs of rubber boots and shoes and canvas rubber soled shoes valued at £174,525, as compared with 1,324,284 pairs valued at £169,118 in the first half of 1926. The leading markets, in the order named, were: Irish Free State, British India, British South Africa, Australia, Denmark and Faroe, British West Africa, Norway, Egypt and Netherlands.

Germany

The Leipzig Fall Fair has not come up to expectations this time. Of course, as a rule more business is done at the fair held in the spring, but even when this is taken into consideration on the whole the results of the fair just closed cannot but be considered disappointing. It is to be noted that the fairs held during the last few years have gradually called forth less interest from buyers and exhibitors than was the case in former days, and it has been suggested that as far as German economics are concerned, the Leipzig Fair is no longer the selling factor *par excellence*, but only one of several, as first place now seems to be taken by traveling salesmen and advertising in trade papers. As for business, the question of price continued to loom large, although interest in quality was also considerable.

Rubber at the Fair

With regard to the rubber industry, results were as uneven as in the case of the other industries—in some lines big orders were booked, while others, like technical goods, had to occupy a back seat as far as prospective buyers were concerned. Incidentally, interest in this type of goods has been falling off for some time past and many manufacturers specializing in this line kept away from the fall fair. However, a good business was done in surgical goods, particularly seamless goods. In the made-up trade, rubber aprons drew considerable interest, England particularly putting in several fair orders. As usual toys of rubber, especially rubber dolls and animals were quite popular and several firms specializing in these articles, as Vulkan Gummiwaren-Fabrik Weiss & Baessler A. G., Leipzig, and Zieger & Wiegand A. G., Leipzig, showed attractive new lines. The former firm had a cat and dog on view which were masterfully carried out as far as finish and design were concerned. Rubber flowers were put out by the same firm and also by M. Steinberg, Koln-Lindenthal, which had some very natural looking and appropriately scented rubber blooms on display, besides a variety of colored butterflies.

Outside of toys and novelties, a new bulb syringe with special back flow was shown by the Continental Caoutchouc Und-Gutta-Percha Compagnie, Hannover, and enjoyed a good deal of popularity with buyers.

Pirelli Organization Growth

Founded in Milan in 1872, the Pirelli organization is one of Italy's most successful industrial developments, international in the scope and character of its manufactures. In the 55 years of its existence, the capital of the concern has grown from two million to one hundred and fifty million lire, now ranking as one of the leading firms in the tire industry, and manufacturing every conceivable kind of rubber goods at the huge factories at Milan and eight other European sites.

One of the most important products of the company consists of insulated cables for power transmission and for telephone and telegraph purposes of both submarine and underground types. The large plant at Southampton is devoted primarily to this line, the latest and most modern factory for cables being in course of erection at Eastleigh.

The Pirelli company is just completing the laying, in the United States, of high pressure underground cables for power transmission of 130,000 volts, the largest ever attempted, according to the company's claims. The cables are made on the exclusive Pirelli new principle and patents.

A large percentage of the raw rubber used in the various manufactures is produced by plantations owned by the Pirelli companies in the Far East.

Lower Saxony

The rubber industry in Lower Saxony, according to latest reports from this German rubber center, is experiencing some improvement, although all difficulties have by no means been overcome yet. But local demand is looking up so that 15 per cent more help was needed. The main difficulties are caused by the constantly increasing wages, particularly in the surgical goods branch where recently wages went up again 10 per cent. Competition from foreign firms, especially from Italy, continues to depress the export business, a circumstance not restricted to the rubber industry in this section, for it is the general complaint that foreigners are making heavy inroads in what was formerly German trade.

Tire Consumption

Tire consumption in Germany during 1926 amounted to 1,010,000, valued at 133,000,000 marks. Of these, 220,000, valued at 10,300,000 marks were motorcycle tires; 600,000, valued at 70,000,000 marks, were tires for passenger automobiles; and 175,000, valued at 51,000,000 marks, were motor truck tires. To these must be added 15,000 tires, valued at 1,700,000 marks for other vehicles.

Sweden

Interesting details regarding Sweden's rubber industry in 1926 have just been officially published and we find that the seven Swedish factories with 3,749 workers, against 3,535 in 1925, produced 4,690,000 pairs of rubber shoes valued 25,310,000 kronor and other rubber goods to a value of 9,980,000 kronor, against 4,900,000 pairs of rubber shoes valued 27,100,000 kronor and other rubber goods valued 10,750,000 kronor in 1925. Since 1913 the number of employes has increased by about 135 per cent, while the value of the articles produced increased about 230 per cent. Several changes in Sweden's export business have taken place since the war, among others the direct export of rubber footwear to British India has ceased, but on the other hand Turkey and Bulgaria in Europe have become important new customers. While exports to Denmark have increased markedly since 1913, those to Norway have fallen considerably.

The import business has also grown in the meantime, the demand for automobile tires and accessories being one of increasing importance, for the local rubber industry is by no means able to cope with this business. An idea of the expansion in this field is gained when it is known that the number of automobiles increased from 3,000 at the end of 1916 to 94,925 at the end of 1926. The chief rubber imports during 1913, 1925 and 1926 are shown in the table below:

	1913 Tons	1925 Tons	1926 Tons
Rubber footwear	114	245	192
Disks, plates and packing of rubber	199	454	451
Rubber thread	7	12	14
Rubber tubes and hose	150	255	291
Rubber bicycle accessories	143	561	506
Tires for vehicles, covers for automobiles	195	1,540	1,308
Machine belting of rubber	99	266	234
Other soft rubber goods	63	473	380
Hard rubber goods	42	71	67

A merger of Sweden's leading rubber factories is reported. This would include the three biggest privately managed concerns, the Helsingborg, Malmoe, and the Viskafors. The new combine, which is apparently directed against the cooperative rubber factory at Gislaved, is said to have a total capital which in American currency amounts to $5,628,000.

This is interesting news in view of the fact that the three big firms just mentioned, together with the Svenska Gummifabriks A. B. which was recently purchased by the Kooperative Forbundet for 6,000,000 kronor, all of which manufacture rubber footwear, were members of a rubber cartel having ample tariff protection so that it controlled the domestic market and the four members were able to charge very high prices for rubbers. The cooperative association as we said above purchased stock in the fourth company in order to break up the cartel and thus lower the cost of rubber footwear to the consumer. The cartel agreement by which the companies concerned were bound, expired on July 31, 1927, and apparently was not renewed. However, the news of the combine shows that the remaining members of the original cartel have decided to make a stand against the cooperative association, and for the time being at least a price war on rubbers may be looked for.

Austria

Official statistics covering Austria's rubber trade during the first quarter of 1927, show that crude rubber imports came to 7,130 quintals, valued 3,572,000 schilling. Among the manufactured goods imported during the 1927 period were listed footwear, 258 quintals, value 315,000 schilling; tire covers, 1,087 quintals, value 794,000 schilling; solid tires 231 quintals, value 112,000 schilling; belting, 189 quintals, value 245,000 schilling. Imports of footwear were almost double those for the same period of the preceding year, and belting imports were more than double, but tire covers for automobiles and solid tires, particularly the latter, showed a very substantial decrease. The exports also showed some notable decreases, thus the most important article, heels and soles, fell from 1,098 quintals, value 672,000 schilling, in the 1926 period to 843 quintals, value 678,000 schilling in 1927; while exports of fabrics combined with rubber, elastic fabrics and webbings, clothing and other articles made of fabric combined with rubber, all together amounted to 1,288 quintals, value 2,195,000 schilling in the first quarter of 1926, but fell to 993 quintals, value 1,596,000 schilling in 1927. The exports showing increases included footwear, 436 quintals instead of 289 quintals; hard rubber and hard rubber manufactures, 441 quintals instead of 311 quintals in 1926.

Spain

Imports of tires and tubes into Spain showed a general increase in 1926 as compared with 1925, as the table below shows:

	1925 Value	1926 Value
Automobile casings	$2,339,300	$3,641,700
Solid tires	547,046	865,243
Inner tubes	529,260	726,917

France has the lead in this market, the greater part of the casings, solid tires and inner tubes being supplied by this country. In 1926, Italy held second place as source of tire casings, showing an increase of 100 per cent when compared with 1925, when it also was second. However, figures for the first half of 1927 indicate that Italy has been unable to maintain this position and has fallen to fourth place, the United States having in the meantime made a spurt to second place, followed by England in the third place. For some reason or other the Italian shipments were insignificant during the first half of the current year. France continues to lead in the tire business.

Australia

News of the merging of the Dunlop Rubber Co. of Australasia with the Dunlop Rubber Co. of Great Britain by the sale of 500,000 shares to the latter company, has been received with much interest. The English company will now have the right to choose three of the directors of the board of the Australian company. On the other hand the combination will, it is hoped, strengthen the position of the Australian company as closer technical and commercial alliance will result thereby, and in addition it will have access to the British company's trade secrets of which the Anode process of depositing rubber on molds by electrolysis is the most important. It is also proposed to establish a separate New Zealand company to extend trade in that dominion.

Further reports state that the present capacity of the Melbourne factory is to be doubled and that the necessary work will be completed about the middle of 1928. There is a rumor that these extensions and the Dunlop merger have been brought about by the reported fact that several American tire companies plan to manufacture in Australia and that the Dunlops thereby are preparing for the keen competition that is looked for there.

Australian Goodyear Factory

Establishing a new record for speed, the Goodyear Tire & Rubber Co. has started production at the factory in Sydney, Australia, just eight months after ground for the new production unit was broken. The new plant has an initial capacity of 1,000 tires and tubes a day, and is operated under the direction of a staff of technical and production experts from other plants of the Goodyear Company, with native personnel.

The new unit brings the number of tire factories operated by Goodyear to six: two at Akron, one in Los Angeles and two in Canada. A seventh will start producing tires in Wolverhampton, England, before the end of the year.

It is believed by Goodyear officials that the manufacture of tires in the Australian capital will supply a rapidly growing market in that country, and will enable the company to more strongly maintain its position as the world's largest producer of automobile, truck and bus fires.

The Rubber Industry in the Far East

Malaya

From an official report of the Rubber Restriction Department, Federated Malay States, for 1926, published as a supplement to the *Federated Malay States Government Gazette*, August 19, 1927, we learn that assessment for the fourth restriction year, which was from November 1, 1925, to October 31, 1926, was completed in January, 1926. Probably the most important change was cancelling the rule which fixed 500 pounds per acre as a maximum and removed all limits to maximum assessment. The total number of holdings of over 100 acres, both European and Asiatic, assessed in the Federated Malay States and Straits Settlements by the Joint Committee during that year came to 1,402.

Fifth Restriction Year Assessments

In September, 1926, an attempt was made to start assessment for the fifth restriction year beginning November 1, 1926, but the work was actually commenced in October, 1926. The new assessments were based on crop figures supplied by estates for the period October, 1925, to September, 1926, inclusive. Nearly all assessments were revised and the general tendency was an increase of about 7 per cent on the figures for the preceding year. The increase is explained by the fact that for the first time since prerestriction days estates had an opportunity to prove their yields by reason of the 100 per cent release from February to October of 1926. The report adds that the work of the committee was hampered because many estates were unable to produce their full crops with 100 per cent release because of labor conditions and the difficulties of reorganizing after a long period of small outputs.

1926 Standard Production

The total standard production of the Malayan restriction area at the end of the fourth restriction year was:

	Long Tons
Federated Malay States	176,592
Straits Settlements	36,805
Johore	65,610
Kedah	27,126
Kelantan	7,220
Trengganu, approximately	1,500
Total	314,853

In spite of the liberal allowances, there were 130 appeals against the assessment committee's decisions and 34 against those of district officers, in all 164 appeals as compared with only 65 the year before. Of the 164 appeals altogether 98 were allowed, 65 were dismissed and one canceled.

Exports and Stocks

The authorized exportable percentage of standard production for the fourth restriction year was 85 per cent for the first quarter and 100 per cent for the following three quarters, making the average for the year 96.25 per cent. The actual exports from the Malayan restriction area, at minimum duty were 278,228 tons against 182,942 tons for the previous year.

While London stocks rose from 3,543 tons on January 1, 1926, to 42,141 tons on November 1, stocks in the hands of licensed dealers in the Federated Malay States averaged only about 4,000 tons. At the close of the fourth restriction year stocks on estates of over 100 acres were 16,712 tons, and on estates of 25 to 100 acres, 2,843 tons.

The carry-over of unused export rights on November 1, 1926, was calculated at 23,544 tons.

Preventive Work

For the purpose of preventing smuggling, nine motor launches were in commission throughout the year. Owing to the 100 per cent release prevailing throughout the greater part of the year, there was a very marked decrease in smuggling, the number of captures made amounting to 58 boats and 1,418.07 piculs of rubber (picul = 133⅓ pounds), and 130 persons were convicted of smuggling, against 284 boats, 6,646.43 piculs, and 715 persons the previous year. It was discovered that while there was no organized smuggling in the Federated Malay States, fraud on an extensive scale was rife on the Johore-Malacca borders, native customs officers working hand in glove with the smugglers.

The I. S. P. Conference

The Fourth Annual Conference of Planters under the auspices of the Incorporated Society of Planters, held in Penang, was highly successful and speaks much for the work that the society has been doing in furthering the interests of planting in general. A number of interesting papers on a variety of subjects were read, among those dealing with topics of interest to the rubber planter being that by Colonel F. Summers, of the Rubber Research Institute of Malaya, on bud grafting. After explaining the meaning and aims of bud grafting, Colonel Summers discussed some of the objections usually made to bud grafting, that the part where the stock and scion joined would prove a source of weakness, that bud grafts are less resistant to disease, that bud grafts will have a shorter life than the mother trees from which they are taken, etc., and referring to experience with budded and grafted fruit trees showed that these objections hardly seemed to have a basis of fact. He also suggested that the best method of tapping budded Heveas had yet to be discovered in view of the fact that yields fall as the cut approaches the union of bud with stock.

Another important paper was that by Dr. William B. Haines on "Some Physical Aspects of Soil Conservation." Among the chief points stressed in the paper were the necessity for soil tilth and cover crops.

Periodic Tapping

In view of the interest always shown in methods of reducing costs on plantations, C. R. Harrison's paper on "Periodic Tapping" should prove highly stimulating. The paper is a conclusion to one on the same subject read at a conference in 1925, and deals with the results obtained on 2,524 acres with a modified A. B. C. system. This system consists in dividing an estate into three equal areas called for convenience *A*, *B*, and *C*. Sections *A* and *B* are tapped on alternate days while *C* is rested. After six months *A* is rested and *C* is taken into the tapping round together with *B*. After another six months, *A* is again tapped at the same time as *C* while *B* is rested and so on. This makes for a tapping period on alternate days of 12 months and a rest period of six months. The area dealt with was planted from 1906 to 1911, and for purposes of comparison only 1,310 acres were finally considered. The area had been thinned from a stand of 79 trees per acre to 66. The period covered is from May 1, 1926, to April 30, 1927. The yield obtained during this period on the above system was 477 pounds per acre. The same area on the usual alternate daily system yielded an average of 500 pounds per acre over a period of five years. That is to say that while the new system shows a loss of crop of 4.6 per cent, there was a saving in bark, labor, etc., of 33⅓ per cent. The lecturer emphasized the fact that it was not likely that the area would have continued to produce at the rate of 500 pounds per acre on the alternate daily system without rest.

SOUTH INDIA

The amount of rubber shipped from South India during the first half of 1927 came to 6,824,256 pounds, of which half went to Ceylon and rather less than half to England. Direct shipments of rubber from South India to America came to only 311,440 pounds during the six months under consideration.

Netherlands East Indies

In the vegetative propagation of Hevea by means of budgrafts attention is chiefly confined to the productive capacity. Mother trees which consistently give high yields under all circumstances are selected from which to obtain the necessary bud wood. The budded trees, when they are about five years old, are tested to see whether they have inherited the high yielding capacity of the mother trees. All this work is done with the idea of selecting material according to quantitative yields. But attention is also required for the quality of the rubber obtained from these selected trees. It is known that some trees yield latex with a higher rubber content than others, or the dry rubber obtained from this latex when tested is found to be weaker or to have a slower rate of cure than that of others. On modern plantations such differences in quality offer no difficulty, because they are neutralized by the great diversity of the trees and by the large scale mingling of latex that takes place on the average estate. But plantations consisting of budgrafts from a few mother trees assume a different aspect altogether. For should the product of one or more of these mother trees show any abnormality as to rate of cure, slope, tensile strength, etc., it is quite possible that the budgrafts would repeat these weaknesses and then the entire planting of budgrafts would give rubber with abnormal properties.

Testing Mother Trees

At the Rubber Experiment Station of Buitenzorg, Java, Dr. O. de Vries and W. Spoon carried out a preliminary test in this direction. Material was collected from six mother trees and from budgrafts at intervals during the period 1924-1926. Of the six mother trees, two were planted in 1882 and the other four in 1908, the first two were therefore about 43 years old and the other four about 17 years old. In February, 1917, to January, 1918, when tapped daily, with one left cut over a quarter of the circumference, the two oldest trees yielded, respectively, an average of 56 and 70 gr. dry rubber per tapping, while the dry yield per tapping for the other four ranged from 26.3 to 9.3 gr. During the period July, 1924, to December, 1925, the outputs from the old trees were on an average 47.5 and 48.7, respectively, while those for the others ranged from 51.4 to 13.6 gr. The 13.6 gr. were obtained from a tree that had previously given almost double this amount, and therefore represents a deterioration in that tree. The high yields from the two old trees are noteworthy. When the latex of the six trees was examined, it was found that in the case of three trees the proportions of serum constituents and rubber content were not favorable, while in the case of two trees, including one of the preceding three, the dry rubber showed low viscosity, low tensile strength and high slope; that is, these trees yielded a poor grade of rubber.

Comparison of Budgrafts

Budgrafts from these trees were planted during 1918-1919. Tapping tests in connection with this investigation were begun when the trees were only six years old, but at that time the influence of the age of the trees was too prominent in the results to be of much value. However, the following year these tests were resumed and it was then found that the abnormalities observed in the latex of three mother trees, as described above, were apparently not inherited by the offspring. On the other hand, the slow rate of cure of one of the mother trees was repeated in the budgrafts, as well as the weakness of the vulcanized rubber in one instance and the low viscosity and plasticity in two cases. These tests can by no means be considered conclusive as the number of budgrafts examined were too few. Nevertheless, it has been shown that there is a possibility of budgrafts inheriting one or other abnormality from the mother trees and it has certainly been made clear that we have here a very wide field to be investigated yet in connection with the question of vegetative propagation.

N. E. I. Notes

Labor Restrictions. The new rulings regarding the recruiting of labor which became effective June 1, 1927, have called forth a good deal of adverse comment in the local press. By the new provisions native planters are exempted from practically all limiting stipulations and red tape, while recruitment for European estates which employ coolies under the so-called penal sanction is still subject to a number of rigorous conditions. This, it is claimed, is unnecessarily favoring the native to the disadvantage of the European planter and incidentally to the detriment of the coolie who, with the removal of almost all formalities, will easily fall a prey to unscrupulous natives who make a business of supplying labor to native planters. It is also foreseen that a number of the unsuspecting coolies will be shipped over to Malaya to work under very unfavorable conditions for Chinese owners, while Europeans, who are already suffering, owing to a shortage of labor amounting to about 50,000, will be worse off than ever.

Rubber Quotations and Exchange Stunts

Under this title a local planting paper takes up the widely circulated and much discussed (in planting circles) item published by the *Herald Tribune* some time in June regarding a method of enormously increasing the yields from rubber trees, supposed to have been recently discovered in the Dutch East Indies. Other papers have treated the same subject, some have regarded it as a huge joke and a typical sample of American misinformation or exaggeration, but some there are who see in it a subtle form of propaganda with the aim of forcing down the market. It is claimed that every once in a while when Americans thought the rubber market was not low enough they spread some more or less ridiculous and unfounded news, or else they suddenly discovered conditions which had been known to planters for years. The aim of these distorted announcements is perfectly plain, but nevertheless they have the desired effect—as a result of the latest exaggeration, for instance, rubber went down several points.

Ceylon

The following statistics issued by the Ceylon controller of rubber, for the first ten months of the fifth restriction year, show that Ceylon has not made any extensive use of the unused coupons still to her credit:

	Exportable Maximum Tons	Ceylon Grown Rubber Tons	Imported Rubber Tons
November, 1926....	4,923	4,228	321
December, 1926....	4,923	6,498	618
January, 1927.....	4,928	6,753	404
February, 1927....	4,307	3,306	208
March, 1927.....	4,307	7,111	642
April, 1927.....	4,307	3,705	542
May, 1927.....	3,692	2,853	428
June, 1927.....	3,692	3,596	370
July, 1927.....	3,692	3,788	350
August, 1927.....	3,692	5,626	327
Totals.....	42,458	47,459	4,210

During the ten months, therefore, Ceylon worked off 5,001 tons of the outstanding credits, which is an average of 500 tons per month. On August 31, 1926, there were still 9,855 tons of unused coupons outstanding. When examining Ceylon's figures the question quite naturally arises whether Ceylon is unable to produce more than she is at present exporting, or whether, as some believe, planters refuse to export more at present prices and are keeping stocks for the time when prices will once more be up in the air, as it is expected it will be in the near future. Whatever may be the true facts of the case from the above tables, we may infer if Ceylon continues to export at the same rate, the end of the fifth restriction year, or rather, the beginning of the sixth year, will find her with almost 9,000 tons in unused export right in hand, which rights will come in very handy when prices do go up again.

Rubber Patents, Trade Marks and Designs

United States

September 13, 1927*

1,642,049 Shock Absorber. C. W. Waltz, Cleveland, Ohio.

1,642,050 Foldable Waterproof Boot. E. R. Wharton, Medford, Mass.

1,642,133 Tire Wheel. D. A. Walsh, Kansas City, Mo.

1,642,136 Well Tubing Catcher. R. A. Wilson, assignor to The Gulberson Corp., both of Dallas, Tex.

1,642,149 Float. W. J. Haynes, Kansas City, assignor of one-half to J. H. Swathmey, Harrisonville, both in Missouri.

1,642,204 Heat Insulating Tape. C. L. Hill, assignor to Union Asbestos & Rubber Co., both of Chicago, Ill.

1,642,224 Battery Binding Post. L. G. Bowen, assignor to Bowen & Phelps Battery Co., both of Bedford, Ia.

September 20, 1927*

1,642,737 Footwear. F. H. Martin, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,642,775 Universal Joint. R. L. Henry, Detroit, Mich., assignor to A. C. Henry, Inwood, Long Island, N. Y.

1,642,819 Drain Tube. J. E. Long, Marshall, Mo.

1,642,835 Recoil Pad for Guns. A. H. Ammann, assignor to Jostam Mfg. Co., composed of W. R. Jorgenson, W. D. Stannard and A. H. Ammann, all of Chicago, Ill.

1,642,877 Footwear Insole. B. F. Hartwell, Winchester, Mass.

1,642,878 Rubber Sole. B. F. Hartwell, Winchester, Mass.

1,642,897 Tire Casing and Tube Protector. R. D. Sarver, Owatonna, Minn.

1,642,951 Heel. L. J. Harrison, Derby, Conn.

1,642,991 Heel Attaching Device. J. N. Fowler, Mobile, Ala.

1,643,024 Sectional Rubber Pavement. A. F. Masury and A. H. Leipert, assignors to International Motor Co., all of New York, N. Y.

1,643,125 Boot. L. H. L'Hollier, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,643,195 Double Tread Pneumatic Tire. J. E. Bove, Kearney, N. J.

September 27, 1927*

1,643,294 Interchangeable Rubber Heel. A. H. Cowlin, Sidney, British Columbia, Canada.

1,643,514 Pneumatic Tire. J. F. Palmer, Buffalo, N. Y.

1,643,534 Collapsible Tire Rim. A. T. J. Bahr, Kansas City, Mo., assignor to G. B. Rooney, Fairview, Kans.

1,643,571 Printing Machine Employing Rubber Cylinder and Plate. H. Bielefeldt, Berlin, Germany.

1,643,672 Demountable Tire Rim. D. H. McClelland, Pittsburgh, Pa.

1,643,794 Hot Water Bottle. E. E. Sturk, Hollywood, Calif.

1,643,848 Tire. E. Hibbert, Goulburn, New South Wales, Australia.

October 4, 1927*

1,644,027 Bouncing Doll. J. H. O'Neill, Springfield, Mo.

1,644,046 Vehicle Bumper. A. Weiland, Neshanic, N. J., assignor to Pneumatic Appliances Corp., New York, N. Y.

1,644,104 Blowout Patch. G. E. Blaylock, Baltimore, Md.

1,644,108 Visual Deflation Signal for Tires. J. E. Kennedy and M. A. Kennedy, Los Angeles, Calif.

1,644,590 Storage Battery. W. E. Holland W. H. Grimditch, assignors to Philadelphia Storage Battery Co., all of Philadelphia, Pa.

1,644,609 Nonpneumatic Tire Filler. J. P. Prall, Woodridge, N. J.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Dominion of Canada

September 13, 1927

273,813 Syringe Nozzle. P. Phillips, Seven Oaks, Kent, England.

273,845 Shoe Toe Stiffener. The Beckwith Box Toe, Ltd., Sherbrooke, Quebec, assignee of W. H. Baynard, Boston, Mass., U. S. A.

September 20, 1927

273,979 Spring Shackle. R. M. Lovejoy, Boston, Mass., U. S. A.

273,987 Rubber Bushing. H. S. Powell, Utica, New York, U. S. A.

273,996 Pneumatic Tire Valve Stem. E. A. Sutherland, Caribou, Maine, U. S. A.

274,057 Heel Tread Device. The Plyrubber Heel Co., Boston, assignee of C. Roberta, Winchester, both in Mass., U. S. A.

September 27, 1927

274,153 Teat Fastener. R. Kiesel, Schwetzingen, Beden, Germany.

274,224 Cord Tire Strip. The Dickinson Cord Tire Corp., assignee of F. S. Dickinson, both of New York, U. S. A.

October 4, 1927

274,334 Tire. A. F. Fabre, Castres, France.

274,437 Separable Fastener. The Firestone Apsley Rubber Co., assignee of C. H. Baker, both of Hudson, Mass., U. S. A.

274,449 Extension Felloe. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, Ohio, U. S. A.

274,454 Hosiery Protector. The I. B. Kleinert Rubber Co., assignee of C. C. Morrison, both of New York, U. S. A.

United Kingdom

August 31, 1927

273,821 Heel. J. E. M. Cooke, 18 Market Square, Stafford.

273,924 Hygienic Device for Telephone Instrument. J. W. Tunstall, 16 Colwyn Grove, Bolton.

273,967 Umbrella. M. de Glaser (née Schiff), 10 Rue du Conseiller Collignon, Paris, France.

273,969 Universal Joint Sleeve. H. Clark, 81 Station Road, Wylde Green, Birmingham.

273,973 Universal Joint Plug. W. H. Dorman & Co., Ltd., 43 Foregate street, and R. L. Stafford, 151 Oxford Gardens, both in Stafford.

274,000 Balloon. H. Schein, 1 Chiswell street, Finsbury, London.

274,006 Wrinkle Remover. W. Bräuner, 45 Wandsbeker Chaussee, Hamburg, Germany.

274,012 Golf Tee. C. H. Shearman, Stoneleigh, Wellington Road, Dudley, Worcestershire.

274,044† Elastic Joint. Compagnie D'Applications Mecaniques, 42 Rue Franklin, Ivry Port, Seine, France.

September 7, 1927

274,210 Universal Coupling. O. Y. Imray, 30 Southampton Bldgs., London. (International Motor Co., 25 Broadway, New York City, U. S. A.)

274,216 Seat Mounting Employing Rubber. G. Moulton Spencer & Co., Ltd., and R. T. Glascodine, 2 Central Buildings, Westminster.

274,306 Massage Cup. B. E. Thomlinson, 13 Queensthorpe Road, Sydenham, London.

274,349 Football. R. R. Osman, 10 Warwick Court, Holborn, London.

274,363 Wheel Tire. W. Thornton, 519 Atlas Bldg., Salt Lake City, Utah, U. S. A.

274,416† Wind Screen Cleaner. V. H. Christen, 319 Orleans street, Detroit, Mich., U. S. A.

September 14, 1927

274,454† Massage Roller. P. Mayer, 57 Pernerstorfergasse, Vienna.

274,502† Door Buffer. Ternstedt Mfg. Co., 6307 West Fort street, assignees of T. P. Archer, 2539 West Grand Boulevard and J. B. Flynn, 6316 Garfield avenue, all in Detroit, Mich., U. S. A.

274,557 Suspender. W. E. G. Firebrace, 2A New Quebec street, London.

274,618 Mud Guard Employing Rubber. H. Panzetta, 14 Lynwood Road, Redhill, Surrey and H. Warwick, 53 Short's Gardens, London.

274,619 Horseshoe. J. Campbell, 379 St. Vincent street, Glasgow, Scotland.

274,628 Motorcycle Saddle. W. Douglas, The Woodlands and Douglas Motors, Ltd., both in Kingswood, Bristol.

274,672 Crutch Head. H. W. Hawkins, 45 Abinger Road, Portslade, Sussex.

274,729 Jointing Branch Pipe. J. L. Rushton, Kay Street Works, Bolton.

274,762 Balloon. H. Schein, 1 Chiswell street, Finsbury, London.

274,776 Baby Pants. I. Dorogi, L. Dorogi and Dorogi & Co. Rubber Goods Factory, Ltd., 50 Albertfalva, Budapest.

274,794 Conductor. O. Nagy, 136 Uhlandstrasse, Wilmersdorf, Berlin, Germany.

274,819† Brassierè. H. A. Tillmanns and B. W. M. Schwabe, (trading as Vereinigte Gummiband-Webereien Tillmanns, Schniewind & Schmidt) 31 Kielerstrasse, Elberfeld, Germany.

274,875† Protective Device For Use in Hair Waving, Employing Rubber. Eugene, Ltd., assignees of H. Matters, both of 563 Fifth avenue, New York, U. S. A.

September 21, 1927

274,937 Truss. Brasseur Surgical Mfg. Co., Ltd., and M. V. Desmond, 90 Worcester street, Birmingham.

274,989 Motorcycle Saddle. E. Lycett, Bromley street, Birmingham.

274,996 Abdominal Belt. J. Mildenberg, 97 Luegallee, Oberkassel, Dusseldorf, Germany.

275,019 Protector for Back of Shoe. Universal Rubber Paviors (Manchester 1923), Ltd., and L. Gaisman, Chatham Street Rubber Works, Canning street, Audenshaw, near Manchester.

275,026 Brush. W. W. Richardson, 18 Rodway Road, Roehampton, London.

275,098 Exercising Apparatus. R. H. Noe, 739 North Auburndale, Memphis, Tenn., U. S. A.

275,099 Rolls for Crushing Iron Scales. A. Lucas, 5908 Cherry street, Kansas City, Mo., U. S. A.

September 28, 1927

275,261† Massage Roller. A. C. Plötze, 115 Kaiserdamm, Charlottenburg, Berlin, Germany.

275,272† Golf Tee. E. H. Jones, Hotel Puritan, Boston, Mass., U. S. A.

275,353 Foot Arch Support. J. T. Neame, 21 Montague Place, Brighton, Sussex.

275,354 Goggle. M. O'Flanagan, 28 Commons street, Dublin, Ireland.

275,358 Air Cushion. P. Petrie, 4 Koo-y-Ong, Baring Road, Grove Park, London.

275,368 Embossing Die. B. F. Stenz, 410 Riverside Drive, New York, N. Y., U. S. A., and Simplex Sampling Association, Ltd., 1 Newman street, Oxford street, London.

275,384 Rubber Linings for Vehicles. G. Moulton Spencer & Co., Ltd., and R. T. Glascodine, 2 Central Buildings, Westminster.

275,429 Wheel Tire. Dunlop Rubber Co., Ltd., 32 Osnaburgh street, Euston Road, London and W. H. Paull, Dunlop Rubber Co. Works, Fort Dunlop, Erdington, Birmingham.

275,485 Garter. A. Kagan, 95 Boulevard Haussmann, Paris, France, and M. Menz (née Trebbin), 11A Heinrich Seidelstrasse, Steglitz, Berlin, Germany.

275,519 Spring. A. Atkinson, 121 Manchester street, Oldham.

275,541† Artificial Teeth Molds. Ohio Chemical & Mfg. Co., 1177 Marquette street, assignees of C. H. Wardell, 1381 East 85th street, both of Cleveland, Ohio, U. S. A.

† Not yet accepted.

Chemical patents will be found on page 74. Machinery and process patents will be found on pages 77-78.

New Zealand

August 11, 1927

56,265 Heel. F. W. Varley, Kimihia, near Huntly, Waikato, Auckland.

57,385 Machine Employing Rubber Blocks. G. Mitchell, Liffey street, Island Bay, Wellington.

57,897 Combined Gaiter and Goloah. W. M. Urbanek (née Heip), Rotdornstrasse 8 Berlin-Friedenau, Germany.

57,947 Rim Locking Device. J. A. McCutcheon, Clifton Settlement, Waiwera South, Otago.

58,480 Jacket. J. B. Adams, 3 Palm Grove, Berhampore, Wellington.

August 25, 1927

58,735 Suction Retainer for Teeth. S. R. Ellison, Courtenay Place, Wellington.

58,873—Tire Chafing Tape. Michelin et Cie (Societe en Commandite Par Actions) Clermont-Ferrand, France.

Germany

449,498 Sole. Gustav Vogelsang and Vossmerbäumer, Herford.

449,590 Buttonhole Band. Doris Meyer, née Gunther, Neumarkt 12, Chemnitz.

449,934 Tube Filing for Pneumatic Tires. Kurt v. Lude, Körnerstrasse 14, Breslau.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b), are nontechnical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

September 13, 1927, Act of February 20, 1905

232,497 Tressette—elastic bands for hair. Andrew Jergens Co., Cincinnati, O.

232,511 Polly-Bob Baby Pants—baby pants. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

232,513 Representation of a heel which contains the words: "**Pilcomayo M M Comodo Y Bueno**," and "**Made in U. S. A.**"—heels. Casa Anchoreua, Inc., New York, N. Y.

232,515 No-ake—shoes, slippers, boots, overshoes, spats, heels and shoe findings. Cumberland Shoe Co., Newark, N. J.

232,526 Fancy design containing the words: "The Grant Flexated Shoe"—boots and shoes. The Excelsior Shoe Co., Portsmouth, O.

232,552 Foot King—leather and rubber shoes. Field Bros. & Gross Co., Auburn, Me.

232,573 Pod Archo — shoes of leather, rubber, fabric, etc. Cushman-Hollis Co., Auburn, Me.

232,584 Reign Bilt Coat—raincoats. Cooper Rain Wear Mfg. Co., New York, N. Y.

232,607 Device containing the words: "**The Air-Tred Shoe**"—shoes of leather, rubber, fabric, etc. Charles A. Eaton Co., Brockton, Mass.

232,631 Gaytees—boots and shoes of rubber and fabric. United States Rubber Co., New York, N. Y.

232,643 Blue Fox—golf balls. The Draper-Maynard Co., Plymouth, N. H.

232,667 Smartics—arctics. Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.

232,725 Thorogrip—boots and shoes. Firestone-Apsley Rubber Co., Hudson, Mass.

232,730 Roadstead—tires, inner tubes, plasters, patches, boots and tire covers. Chicago Mail Order Co., Chicago, Ill.

September 20, 1927, Act of February 20, 1905

232,975 Anti-Colic—bottle caps. Davol Rubber Co., Providence, R. I.

232,988 Armer-Lastic—elastic webbing piece goods. The Standard Corset Co., New York, N. Y.

233,079 Jacknife—leather and rubber boots and shoes. Endicott Johnson Corp., Endicott, N. Y.

233,080 Flashlite—leather and rubber boots and shoes. Endicott Johnson Corp., Endicott, N. Y.

233,081 Swanks—leather and rubber boots and shoes. Endicott Johnson Corp., Endicott, N. Y.

233,095 Certified—slickers, raincoats, sheepskin coats and rain hats. Crescent Rubber Co., Inc., New York, N. Y.

September 20, 1927, Act of March 19, 1920

233,133 Holdfast—friction tape, inner tube patches and patch stock. The Firestone Tire & Rubber Co., Akron, O.

September 27, 1927, Act of February 20, 1905

233,279 Gasco—washers. Ethel S. Wagenseller, Philadelphia, Penn.

233,360 Representation of a jar ring—jar rings. Cupples Co. Manufacturers, St. Louis, Mo.

233,432 Penalastic—narrow elastic. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

233,437 Double triangle enclosing the words: "**Rubber Service Laboratories**"; across the lower end of the inner triangle the letter and numerals: "**A—16**"—compound used as a vulcanization accelerator in the curing of rubber articles. The Rubber Service Laboratories Co., Akron, O.

October 4, 1927, Act of February 20, 1905

233,571 Moxie—toy balloons, etc. The Moxie Co., Boston, Mass.

233,618 O-Katy—golf tees. Acushnet Process Co., Acushnet, Mass.

233,635 Badgeret—lather brushes. Rubber & Celluloid Products Co., Newark, N. J.

233,641 Circle containg the words: "**R. T. Vanderbilt Co., N. Y.,**" "**Vandex**" and "**American Products**"—selenium used as a secondary vulcanizing agent in rubber compound manufacturing. R. T. Vanderbilt Co., Inc., New York.

233,673 Flyfar—golf balls. Alfred Field & Co., Inc., New York, N. Y.

Dominion of Canada

Registered

September 20, 1927

42,224 Word: "**Monex**"—vulcanization accelerators. The Naugatuck Chemical Co., Naugatuck, Conn., U. S. A.

42,233 Word: "**Rubber-Weld,**" across a disk of solid color, said disk being enclosed by two concentric circles. Rubber-Weld Sales Co., Cambridge, Mass., U. S. A.

42,269 Representation of a strip of blue ribbon, through the center of which runs a white strip; imprinted centrally on the blue and white strip is a device substantially in the form of a double oval, within which appears the representation of a beaver gnawing a maple log, and the words: "**Dominion Rubber System**" arranged in concavo-convex form of type; on the left side of the oval device appears the word: "**Blue,**" while on the right appears the word: "**Ribbon,**" both on the white strip—rubber goods and articles. Dominion Rubber Co., Ltd., Montreal, Quebec.

September 27, 1927

42,302 Word: "**Finchley,**" beneath the representation of a shield across which are diagonal lines arranged in groups of six and in the center the representation of a lion's head—rubber and fabric shoes, coats, vests, etc. Finchley, Inc., New York, N. Y., U. S. A.

42,313 Word: "**Tootsies,**" in script—children's footwear. The Miner Rubber Co., Ltd., Granby, Quebec.

42,315 Word: "**Surf,**" enclosed within a rectangle which is in turn enclosed within a slightly larger rectangle—footwear, clothing, vehicle and animal covering, rubberized cloth, belting, hose, tires, insulating material and rubber cement. The Miner Rubber Co., Ltd., Granby, Quebec.

United Kingdom

September 7, 1927

479,040 E. Wolff & Son—ink erasers, pencils, etc. The Royal Sovereign Pencil Co., Ltd., Britannia Pencil Works, 54, Neasden Lane, Neasden, London, N. W. 10.

479,212 Silverite—insulated electric cables and conductors. The India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106, Cannon St., London, E. C. 4.

481,464 Vacuum—erasers, pencils, etc. M. Myers & Son, Ltd., Charlotte Street Steel Pen Works, Charlotte St., Birmingham.

481,785 Arrow—boots and shoes. Hood Rubber Co., Watertown, Mass., U. S. A. (Albert L. Mond, 19, Southampton Bldg., Chancery Lane, London, W. C. 2.)

September 14, 1927

471,658 Vera Silk—erasers, pencils, etc. Jos. Ilfelder, Schwabacherstrasse, 52, Fürth, Bavaria, Germany (Marks & Clerk, 57-58, Lincoln's Inn Fields, London, W. C. 2).

478,907 Protos—all goods included in Class 40. Siemens-Schuckertwerke Gesellschaft Mit Beschränkter Haftung, 101 Nonnendamm-Allee, Berlin-Siemensstadt, Germany (Haseltine, Lake & Co., 28 Southampton Bldgs., London, W. C. 2).

481,311 Double triangle containing the letters: **Ce-aR**—rubber and gutta percha goods. Compressed Rubber Products, Ltd., Zenith Works, 92a, Villiers Rd., Willesden Green, London, N. W. 2.

482,104 Vulcafix—outfits and compositions for repairing tires and other rubber articles. The Dunlop Rubber Co., Ltd., Fort Dunlop, Holly Lane, Erdington, Birmingham.

482,763 Epidermac—raincoats, waterproof garments, overcoats, etc. James Skinner, 77, Queen St., Glasgow, Scotland.

483,054 Leadaway—boots, shoes, slippers, leggings and gaiters. The Dela Rubber Shoe Co., Ltd., 2, Cambridge street, Manchester.

483,262 Matador—engine and machine packings and jointings. The Beldam Packing & Rubber Co., Ltd., 16, Gracechurch St., London, E. C. 3.

September 21, 1927

478,470 Square in the center of which is a circle containing the representation of a flag rising out of the ocean and on which are superimposed the words: "**Beldam's Pilot**"; across the bottom of the square the words: "**The Beldam Packing & Rubber Co., Limited**"—rubber and gutta percha goods not including tips or pads for heels of boots and shoes or tobacco pouches, and not including any goods of a like kind to any of these excluded goods. The Beldam Packing & Rubber Co., Ltd., 16, Gracechurch street, London, E. C. 3.

482,068 Delmount—all goods included in Class 38. The Dela Rubber Shoe Co., Ltd., 2, Cambridge street, Manchester.

482,249 Handy-Andy—repair outfits for tires and tubes. The Miller Rubber Co., Akron, Ohio, U. S. A. (Sloan & Lloyd Barnes, 34, Castle street, Liverpool).

September 28, 1927

479,948 Pheltose—garters, suspenders, braces and body belts. Tubbs Lewis & Co., Ltd., 29 and 30, Noble street, Falcon Square, London, E. C. 2.

Designs

United States

73,505 Tire Pressure Gage. Term 14 years. George Sylvin Loy, Paris, France.

73,506 Tire. Term 14 years. Horace Mann, Albuquerque, N. Mex.

73,507 Tire. Term 14 years. Horace Mann, Albuquerque, N. Mex.

73,593 Toy Figure. Term 14 years. Arthur P. Witten, assignor to The Western Reserve Rubber Co., both of Akron, O.

Dominion of Canada

7,678 Shoe. Mishawaka Rubber & Woolen Mfg. Co., Mishawaka, Indiana, U. S. A.

7,680 Nursing Bottle Nipple. R. G. A. Beck, Montreal, Quebec.

7,682 Tire Tread. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario.

7,689 Golf Ball. The Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ontario.

Dominion of Canada Rubber Statistics

Imports of Crude and Manufactured Rubber

	June, 1927		Three Months Ended June, 1927	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc.	4,672,405	$1,878,177	13,696,903	$5,418,950
Rubber recovered	868,425	69,427	2,776,439	244,561
Rubber, powdered and rubber or gutta percha scrap	552,248	31,206	1,696,504	114,325
Balata	.....	.....	4,596	2,120
Rubber substitutes	78,201	12,504	179,105	29,056
Totals	6,171,279	$1,991,314	18,353,547	$5,809,012
PARTLY MANUFACTURED				
Hard rubber sheets and rods	22,350	$10,960	68,728	$30,587
Hard rubber tubes	.....	1,974	.....	3,640
Rubber thread not covered	16,780	21,853	55,406	74,272
Totals	39,130	$34,787	124,134	$108,499
MANUFACTURED				
Belting	.....	$12,036	.....	$27,713
Hose	.....	21,276	.....	50,458
Packing	.....	3,884	.....	15,419
Boots and shoes, *pairs*	1,628	2,742	5,226	8,641
Clothing, including waterproofed	.....	51,010	.....	140,527
Gloves	.....	1,560	.....	4,393
Hot water bottle	.....	1,385	.....	3,277
Tires, solid, *number*	82	3,046	164	8,677
Tires, pneumatic, *number*	4,990	19,359	11,458	87,312
Tires, tubes, *number*	3,285	6,286	10,478	22,515
Elastic, round and flat	.....	16,279	.....	36,078
Mats and matting	.....	2,113	.....	6,779
Cement	.....	12,104	.....	27,403
Golf balls, *dozen*	11,351	46,565	26,556	110,649
Heels, rubber, *pairs*	65,229	4,419	275,615	15,800
Other rubber manufactures	.....	132,713	.....	357,864
Totals	.....	$336,777	.....	$923,505
Totals, rubber imports	.....	$2,362,878	.....	$6,841,016

Exports of Domestic and Foreign Rubber Goods

	June, 1927		Three Months Ended June, 1927	
UNMANUFACTURED	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
Crude and waste rubber	$23,428	.....	$63,050	.....
Totals	$23,428	.....	$63,050	.....
MANUFACTURED				
Belting	$44,451	.....	$94,502	.....
Canvas shoes with rubber soles	387,408	.....	868,919	.....
Boots and shoes	72,138	.....	145,870	.....
Clothing including waterproofed	4,906	.....	10,359	.....
Hose	21,030	.....	45,327	.....
Tires, casings	1,762,075	.....	4,251,193	.....
Inner tubes	393,335	.....	896,207	.....
Solid	38,274	.....	104,449	.....
Other rubber manufactures	61,801	$4,956	137,158	$22,557
Totals	$2,785,418	$4,956	$6,553,984	$22,557
Totals, rubber exports	$2,808,846	$4,956	$6,617,034	$22,557

Imports of Crude Rubber Into the United States by Customs Districts

	*August, 1927		Eight Months Ended *August, 1927	
	Pounds	Value	Pounds	Value
Massachusetts	2,305,953	$824,403	34,187,441	$12,626,529
St. Lawrence	.....	.....	6,864	2,265
Buffalo	1,013	378	24,961	9,402
New York	61,403,087	22,010,823	573,943,003	212,051,898
Philadelphia	2,667,309	1,076,700	6,019,825	2,277,979
Maryland	4,752,907	1,623,645	18,277,274	6,641,620
New Orleans	.....	.....	2,057	227
Los Angeles	997,831	374,486	15,511,946	5,708,739
San Francisco	137,635	45,996	3,378,375	1,299,788
Oregon	44,840	16,832	693,659	269,713
Washington	.....	.....	112,000	44,240
Dakota	.....	.....	28	10
Michigan	.....	.....	910	325
Chicago	.....	.....	500	128
Ohio	1,094,398	391,439	4,182,028	1,496,654
Colorado	89,600	32,229	974,400	358,561
Totals	73,494,573	$26,396,931	657,315,271	$242,788,078

*Including latex, dry rubber content.

RESTRICTION HAS ALSO HIT OUR CURRENCY. GOVERNMENT NOTES will be cut shorter. To offset the loss, rubber latex should be added to the paper. Dollar bills might then last longer, even if they did not stretch very much farther.

United Kingdom Rubber Statistics

Imports

	August, 1927		Eight Months Ended August, 1927	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Crude Rubber				
From—				
Straits Settlements	9,960,500	£742,713	90,980,600	£7,229,800
Federated Malay States	3,574,700	260,116	42,628,500	3,379,972
British India	502,900	36,736	9,054,100	726,674
Ceylon and Dependencies	2,875,700	211,636	25,502,500	2,014,836
Other Dutch possessions in Indian Seas	2,219,100	168,333	17,203,200	1,372,153
Dutch East Indies (except other Dutch possessions in Indian Seas)	1,955,400	142,381	21,423,300	1,715,666
Other countries in East Indies and Pacific not elsewhere specified	339,900	24,322	1,989,600	153,528
Brazil	609,800	35,208	7,388,500	467,218
Peru	.....	.....	30,800	1,879
South and Central America (except Brazil and Peru)	19,900	1,440	162,300	11,897
West Africa:				
French West Africa	.....	.....	120,400	6,693
Gold Coast	54,600	3,372	405,900	28,318
Other parts of West Africa	155,600	10,406	1,065,200	79,479
East Africa, including Madagascar	139,100	9,270	987,400	75,440
Other countries	126,600	6,694	1,176,200	85,221
Totals	22,533,800	£1,652,627	220,118,500	£17,348,774
Waste and reclaimed rubber	612,400	8,677	4,749,500	74,249
Gutta percha and balata	394,500	35,259	3,578,100	320,124
Rubber substitutes	600	13	95,100	3,951
Totals	23,541,300	£1,696,576	228,541,200	£17,747,098
MANUFACTURED—†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£147,696	.....	£2,211,380
Inner tubes	.....	19,036	.....	275,457
Solid tires	.....	8,382	.....	130,609
Boots and shoes, *doz. pairs*	28,356	72,014	301,662	516,473
Other rubber manufactures	.....	126,554	.....	1,133,295
Totals	.....	£373,682	.....	£4,267,214

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	1,949,800	£18,882	18,191,100	£182,712
Rubber substitutes	44,400	1,035	445,400	10,472
Totals	1,994,200	£19,917	18,636,500	£193,184
MANUFACTURED—‡*Tires and tubes				
Pneumatic				
Outer covers	.....	£199,099	.....	£2,058,275
Inner tubes	.....	43,702	.....	436,692
Solid tires	.....	24,121	.....	240,432
Boots and shoes, *doz. pairs*	27,140	41,097	161,930	251,453
Other rubber manufactures	.....	247,794	.....	1,928,362
Totals	.....	£555,813	.....	£4,915,214

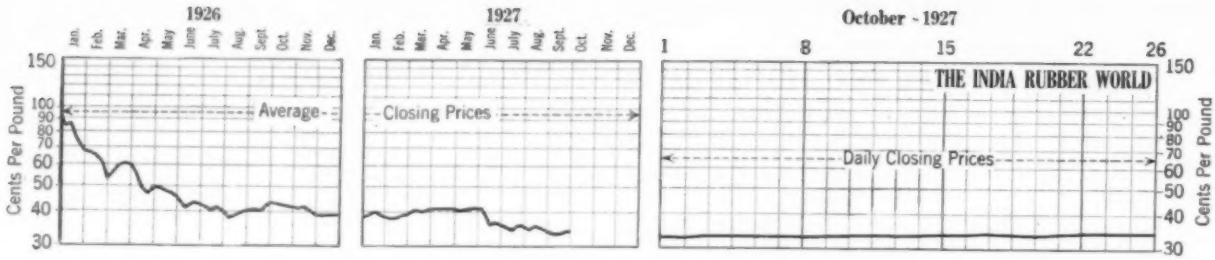
Exports—Colonial and Foreign

UNMANUFACTURED—Crude Rubber				
To—				
Russia	864,500	£76,992	17,159,900	£1,600,874
Sweden, Norway and Denmark	173,800	15,661	1,483,000	136,226
Germany	2,293,800	179,895	19,868,800	1,609,021
Belgium	471,200	35,882	3,953,400	306,274
France	3,690,000	263,760	16,463,100	1,291,094
Spain	83,900	6,574	718,200	56,729
Italy	1,048,600	74,824	8,022,000	656,937
Other European countries	142,700	13,841	2,112,000	196,051
United States	5,938,400	430,237	49,949,600	3,916,956
Canada	100	9	35,900	3,336
Other countries	70,200	5,825	528,000	48,094
Totals	14,777,200	£1,103,500	120,293,900	£9,821,592
Waste and reclaimed rubber	3,600	62	249,200	7,017
Gutta percha and balata	19,500	1,473	403,100	38,637
Rubber substitutes	7,000	290	23,500	1,011
Totals	14,807,300	£1,105,325	120,969,700	£9,868,257
MANUFACTURED—‡*Tires and tubes				
Pneumatic				
Outer covers	.....	£34,069	.....	£331,801
Inner tubes	.....	1,064	.....	43,041
Solid tires	.....	301	.....	8,166
Boots and shoes, *doz. pairs*	1,250	2,107	9,835	21,513
Other rubber manufactures	.....	10,157	.....	71,497
Totals	.....	£47,698	.....	£476,018

*On and after April 12, 1927, tires and tubes imported or exported with and forming part of complete vehicles or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts and accessories, liable to duty from September 29, 1915, until August 1, 1924, inclusive, and on and after July 1, 1925. Commercial vehicles, parts and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

‡Included all tires and tubes prior to April 12, 1927.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York Outside Market

THE outside crude rubber market has undergone a marked change in the natural evolution beginning with the inauguration of the New York Rubber Exchange. The leading consumers of crude rubber have established their own connections in the primary markets of the Far East for the purchase of the bulk of their requirements with ample and advantageous credits. This together with the operations of the potentially dominant American buying organization and the influence of the British restriction plan has practically eliminated the business of the familiar rubber dealer. He no longer takes the responsibility of financing importations for stock. Rubber brokerage business also has suffered by the change. The only business now remaining of that kind is limited to brokers with seats on the New York Rubber Exchange operating for clients. Their functions also include dealings to relieve factories of excess stocks, picking up spot lots and special grades not dealt in on the Exchange. Such brokers frequently have far eastern connections through which they receive firm offers the sales of which they effect direct to consumers.

The October market continued the unchanged routine of prices for the past few months. Factories exhibited no interest in future positions and purchased only for current requirements. The price of ribbed smoked sheets on October 1 was 33½ cents, buyers, 33⅝ cents, sellers. There was a slight upward tendency in prices as the month advanced. On October 15 ribs were 34¼ cents, buyers, 34⅜ cents, sellers. One week later, October 22, ribs were quoted 34½ cents, buyers, 34⅝ cents, sellers.

The attitude of consumers generally was one of placidly waiting the expected official announcement of the British Government on the details for the application of the restriction plan for the quarter beginning November 1. This announcement when made simply continues for the coming quarter the regulations in effect for the past quarter and reserves to the government the right to apply to the importations for the quarter beginning February 1 such modifications as developments in the current quarter make advisable. In the meantime stocks on hand in New York, London and the Far East and afloat exceed 200,000 tons.

The week of October 1 rubber prices showed fluctuations attributable to rumors of what might transpire regarding changes in restriction regulations, rather than to any influence of buying by consumers. Higher London cables induced firmness and shorts covering advanced prices. Some cheap foreign offers were picked up. Information that September arrivals exceeded 34,000 tons and the fact that traders sold and others went short depressed the market to the lows of the week.

The week ended October 8 was quiet with prices firming up towards the close. The far eastern markets offered less than the usual amounts of rubber. Factory demand was scarce although some interest appeared for November rubber.

The week terminating October 15 included one midweek holiday which served to induce a mixed condition of the market. Fair factory demand developed with light offering from the East. Interest centered in the approach of the new restriction year and its outcome.

The market of the week ended October 22 opened with little going on. There was a scattered consumer demand for nearby rubber. On Friday, although London and Singapore prices were off a little, New York prices steadied and recovered the declines of Thursday. On October 25 ribs were 34¼ cents, buyers, 34⅜ cents, sellers.

Paras were quiet with little interest. Balatas quiet and steady.

Importations of all grades in September were 32,798 tons, compared with 38,132 tons one year ago. Plantation arrivals for September were 31,064 tons compared with 36,030 tons one year ago. Total importations of plantation rubber for nine months ended September 30, were 311,427 tons compared with 290,975 tons for the corresponding period of 1926. Total importations of all grades of rubber for the nine months ended September 30 were 331,383 tons compared with 309,838 tons for the corresponding period of 1926.

RUBBER AFLOAT TO THE UNITED STATES

Week Ended	British Malaya	Ceylon	East Indies	London and Liverpool	Totals
October 1	3,911	904	1,628	556	6,999
October 8	4,629	754	1,621	115	7,119
October 15	4,573	861	1,170	1,596	8,200
October 22	4,514	690	1,833	922	7,959

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

Plantations Sheet	September, 1927 26	27	28	29	30	October, 1927 1	3	4	5	6	7	8	10	11	*12	13	14	15	17	18	19	20	21	22
Ribbed smoked	33⅝	33⅞	34	33⅞	33⅝	33½	33½	33⅝	33⅝	33⅝	33⅝	33⅝	33¾	33⅞	....	33⅞	34	34⅛	34½	34⅝	34¾	34¼	34¼	34⅛
Crepe																								
First latex	33⅝	33⅞	34⅛	33⅞	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33¾	33⅞	....	34	34⅛	34¼	34⅝	34¾	34⅜	34⅜	34½	34⅝
No. 2 blanket	29	29⅛	29⅛	29½	29⅛	29¼	28¾	29⅛	29¼	29⅜	29¼	29¼	29⅛	29¾	....	29¾	29⅞	30	30⅝	31½	31⅜	31	31⅛	31⅜
No. 3 blanket	28½	28⅝	28⅞	29⅛	28⅞	28⅞	28⅜	28¾	28⅞	28⅞	28⅞	28⅝	29⅛	29¼	....	29⅜	29½	29½	30⅛	31	30⅞	30½	30¾	30¾
No. 4 blanket	27¾	28⅛	28½	28⅝	28⅛	28⅛	27⅝	28⅛	27⅞	28⅛	28⅛	28⅛	29⅛	29⅜	....	29⅜	29½	29½	29½	30½	30	30	30¼	30⅜
Thin clean brown	28⅝	28¾	29⅛	29⅛	28⅞	28¾	28⅜	28⅞	29⅛	29⅛	29	29	28⅜	28⅝	....	28¾	28⅝	28⅝	30	31	31	30⅜	30¾	30⅝
Rolled brown	25½	26⅛	26¼	26½	25¾	26⅛	25⅞	26⅛	26⅛	26¼	26⅛	26¼	26¼	26½	....	26⅝	26½	26⅜	27	27¼	27½	27½	27¾	27⅞
Off latex	33⅛	33⅜	33⅝	33⅜	33⅛	33⅛	32¾	33⅛	33	33	33⅛	33⅛	33¼	33½	....	33½	33⅝	33⅜	34	34⅛	34	33⅞	34	34

*Holiday.

London

The market during October was generally quiet. The price of spot ribs worked slowly upward from 16¼ pence, sellers, on October 1 to 16¾ pence, sellers, on October 24. Interest centered largely in the expected announcement by the Colonial Office of restriction regulations governing the exportable allowance for the first quarter of the sixth restriction year beginning November 1.

The Times (London) of September 26, 1927, referred as follows to the effects of restriction:

With the British restriction scheme approaching the end of its fifth year and the exportable quota from Malaya and Ceylon reduced to 60 per cent of standard output, the relatively low price of rubber is disappointing to everybody connected with the British side of the industry. Shareholders, however, must not imagine because the price has fallen from 4 shillings, 8 pence, the high point touched in November, 1925, to 1 shilling, 4¼ pence, that companies can not earn profits sufficient to pay dividends. The reasonably capitalized and efficient estates can pay very fair dividends, for costs of production are roughly about half the present price. But it is true that the restriction scheme has not brought the benefits that most shareholders anticipated and were led to expect. The fall in price has been due, of course, to an increase in stocks. Exports from Malaya and Ceylon for the first six months of this year were slightly less, about 1,200 tons, than in 1926. On the other hand, the Netherland East Indies exported about 15,000 tons more than in the first half of 1926. Thus the increase in Netherland exports—which the restriction scheme has stimulated from its inauguration practically accounts for the increase in the stocks. It is widely believed by planters that the restriction scheme saved the planting interests. It was obviously of great advantage to those companies in the weaker position, but it may be doubted whether the gain to individual estates has offset the loss to the British industry as a whole.

In regard to unused coupons the *Times* of Ceylon had the following to say September 2, 1927:

The unused coupon problem has by no means vanished, although the exportable maximum has been at 60 per cent for five months. The actual Ceylon exports in August amounted to 5,626 tons with the exportable maximum 3,692 tons, and leaving outstanding coupons to the amount of 9,855 tons. The restriction committees of the Federated Malay States and the Straits Settlements evidently wish the restriction regulations tightened so that accumulation of unexpended rights will not be possible in future. It is authoritatively stated that they have jointly recommended the government to introduce measures to prevent carryover of export rights beyond the quarter for which they are issued. The proposal comes at a time when the same problem is receiving much prominence in Ceylon. The trade in coupons without rubber has grown to such alarming proportions that something drastic must be done. The root of the whole trouble is the liberality with which assessments have been made. Nothing effectual will be accomplished by tinkering with palliatives. The only satisfactory solution possible is the reassessment of estates on the basis of true productivity.

London stocks increased 2,510 tons between September 24 and October 22, between October 15 and October 22, however there was a decrease of 856 tons in the stock reported. The weekly record is as follows: October 1, 68,519 tons; October 8, 70,167 tons; October 15, 70,916 tons; October 22, 70,060 tons.

Singapore

The market during October was mostly quiet and steady with prices of spot ribs ranging slowly upward from 15⅞ pence on October 1 to 16½ pence on October 24, closely following the prices in London at from ¼ to ⅜ pence lower.

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During the Month of August, 1927.

	Landed for August	Delivered for August	Stocked August 31		
			1927	1926	1925
LONDON	Tons	Tons	Tons	Tons	Tons
Plantation	6,707	5,954	64,281	29,925	4,452
Other grades	28	4	146	167	8
LIVERPOOL					
Plantation	†735	†449	†3,345	†1,219	†231
Total tons, London and Liverpool	7,470	6,407	67,772	31,311	4,691

†Official returns from the six recognized public warehouses.

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago and October 25, the current date:

Plantation Hevea	October 25, 1926	September 26, 1927	October 25, 1927
Rubber latex (Hevea)....*gal.*	$1.75 @	$1.50 @	$1.50 @
CREPE			
First latex, spot	.42¼@	.34 @	.34¾@.35
October-December	.43 @	.34½@	.34¾@.34⅞
January-March	.43½@	.34½@.34¾	.35 @.35⅜
April-June	.45 @	.35 @	.35½@.35¾
Off latex, spot	.41¾@	.33½@.33¾	.34 @.34¼
Amber No. 2, spot	.41 @	.28½@.29	.31 @.31¼
October-December	.41 @	.29¼@	.31¼@.31½
January-March	.41½@	.29¾@	.31¾@
April-June	.42 @	.30½@	.32¼@
Amber No. 3, spot	.40½@	.28 @.28½	.30½@
Brown, thin, clean	.40 @	.28¼@.28½	.30¼@.30½
Brown, specky	.39 @	.28 @	.29 @.29½
Brown, roll	.36½@	.25 @	.27½@.28
Sole crepe	.70 @	.58 @	.58 @.60
Sheet			
Ribbed, smoked, spot	.42½@	.33¾@.34	.34¼@.34½
October-December	.43⅛@	.34¼@	.34½@.34¾
January-March	.44 @	.34½@.34¾	.34¾@.35¼
April-June	.44½@	.35½@	.35¼@.35¾
East Indian			
PONTIANAK			
Banjermassin	.17½@	.09 @	.09 @.10
Pressed block	.27½@	.14 @	.15 @
Sarawak	.17¼@	@	.10 @
South American			
PARAS			
Upriver, fine	.37½@	.27¾@	.27¼@
Upriver, fine	.52½@	*.37½@	*.37½@
Upriver, medium	.30 @	@	.24½@
Upriver, coarse	.28 @	.20 @	.21½@
Upriver, coarse	*.41 @	.29 @	*.30¼@
Islands, fine	.34 @	.24½@	.25 @
Islands, fine	*.50 @	*.37 @	*.36 @
Acre, Bolivian, fine	.38 @	.28 @	.27¾@
Acre, Bolivian, fine	*.53 @	*.38 @	*.38 @
Beni, Bolivian	.38½@	.28½@	.28 @
Madeira, fine	.39 @	.27¾@	.27½@
Peruvian, fine	.36 @	@	@
Tapajos, fine	.35 @	@	@
CAUCHO			
Upper Caucho ball	.28½@	.20¾@	.22 @
Upper Caucho ball	*.42 @	*.29 @	*.30½@
Lower Caucho ball	.25 @	.19¼@	.20½@
Maniçobas			
Ceará negro heads	†.32 @	.22 @	.22 @
Ceará scrap	.16 @	.12 @	.12 @
Maniçoba, 30% guaranteed	.33 @	.22 @	.22 @
Mangabiera, thin sheet	.35 @	.22 @	.22 @
Centrals			
Central scrap	.28 @	.19½@	.20½@
Central wet sheet	.22 @	.15 @	.14 @
Cerinto scrap	.28 @	.19½@	.20½@
Esmeralda sausage	.28 @	.19½@	.20½%
Guayule			
Duro, washed and dried	.33½@	.28½@	.28 @
Gutta Percha			
Gutta Siak	.33 @	.21 @	.22 @
Gutta Soh	.33¼@	@	.38 @
Red Macassar	2.80 @	3.50 @	2.90 @ 3.00
Balata			
Block, Ciudad Bolivar	.48 @.50	.40 @	.48 @ .50
Colombia	.42 @	.41 @	.39 @
Manaos block	@	.44 @	.50 @
Panama	.42 @	.41 @	.41 @
Surinam, sheet	.76 @	.57 @	.58 @
Amber	.81 @	.61 @	.62 @ .63
Chicle			
Honduras	‡.56 @.60	‡.65 @	‡.68 @
Yucatan, fine	‡.56 @.60	‡.65 @	‡.68 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Low and High New York Spot Prices

	1927*	October 1926	1925
PLANTATIONS			
First latex crepe	$0.33¼@$0.35	$0.42 @$0.43¼	$0.92 @$1.03½
Smoked sheet, ribbed	.33 @ .35	.42 @ .43	.92 @ 1.02½
PARAS			
Upriver, fine	.27 @ .28¾	.37¾@ .39	.71½@ .95
Upriver, coarse	.19 @ .21	.28 @ .30	.46 @ .63
Islands, fine	.26 @ .27	.34 @ .37½	.63 @ .78

* Figured to October 22, 1927.

The Rubber Exchange of New York, Inc.

Transactions on the Rubber Exchange between September 26 and October 22 inclusive amounted to 8,470 contracts, equivalent to 21,175 tons, compared with 12,653 contracts on 31,625 tons in the preceding corresponding monthly period. The high and low fluctuations of the market were less than usual because of the prevalence of quiet trading conditions due to uncertainties and rumors of the pending regulations of the restriction scheme for the new restriction year beginning November 1.

In the week ended October 1 the market showed a firm tendency and prices advanced with active trading. The sentiment of the trade improved because of some heavy factory buying and through various rumors concerning the Restriction Act, particularly one that a time limit might be set on outstanding coupons.

October 8 closed a week of dull trading with prices yielding under pressure. Information from rubber manufacturing centers indicated that factories are buying from hand-to-mouth and feel secure as to their future requirements by the stocks in London and in this country. Until these stocks decline materially no upward trend can be expected.

In the week ended October 15 the market was in a state of lethargy due to the extremely bearish statistical position with prices very firm. In spite of these factors, the primary markets are extremely steady and rubber was difficult to obtain. Sellers in Singapore invariably raise their prices on the slightest indication of firmness on this side. Much has been made of the Dutch rubber plantations and the effect which they have had on the entire situation. It is believed that the Dutch are about at their maximum production and while they were unwilling years ago to cooperate with the British, there seems to be a change in attitude as press reports state that the British and Dutch are now in negotiation to effect some sort of selling agency. One cannot overlook the natural human desire to get as much for one's goods as possible. America now using 75 per cent of the world's supply will always remain an easy prey to higher prices. Both the British and the Dutch fully recognize the fact that America is able to pay higher prices for rubber.

The outstanding market feature of the week ended October 22 was the following very unexpected announcement as cabled from London:

Under the Stevenson restriction plan the standard production which may be exported from Malaya and Ceylon will remain at 60 per cent for the quarter, which begins with the first of next month. The Colonial Office reserves the right to make any change on February 1, 1928, the first day of the succeeding quarter, if it is considered that a change is necessary. Notice as far ahead as is practicable will be given, the statement continues.

Government territories concerned will be asked to overhaul the machinery of the restriction scheme with a view to increasing efficiency, and the government will be consulted as to whether any alterations are required in the regulations now in force, the statement adds.

During the month the annual election of the Rubber Exchange took place resulting in the reelection for a third term of F. R. Henderson as president. Vice President Charles T. Wilson and Treasurer J. Chester Cuppia were also reelected. There was no opposition ticket and the vote was unanimous.

Four new nominees for the Board of Governors were elected and eight of the present board reelected for a term of one year. The new members of the board are: D. D. Haldane, of Haldane, Bierre & Co., Inc.; Otto Meyer, of Meyer & Brown Corp.; John H. McFadden, of George H. McFadden & Brother and Walter W. Price of Livingston & Co.

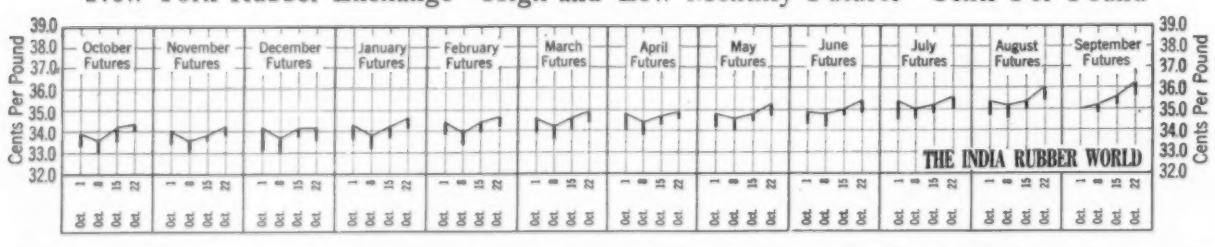
Those reelected to the board were Robert L. Baird, William E. Bruyn, James T. Bryan, W. Leslie Harriss, David S. Kubie, Jerome Lewine, Fred Pusinelli and Lucius D. Tompkins. The new board will take office on Thursday at noon.

The following résumé is presented of the annual report of President F. R. Henderson covering the activities of the Rubber Exchange for the year recently closed:

Rubber contracts to the value of more than $150,000,000 were traded in on the Rubber Exchange of New York during the year ended August 31 last. This amount represented approximately 72,000 contracts calling for 180,000 tons of crude rubber. The Exchange has had a very beneficial effect upon the rubber industry generally, in helping to stabilize prices, and the hedging facilities which the market offers are being more widely used by all branches of the rubber business.

During the year prices on the Exchange had an extreme fluctuation of 11.9 cents per pound, the highest price, 45.50 cents, being reached September 26, 1926, and the lowest, 33.60 cents, on August 30 last. June 9, 1926, established a new record in volume, when 1,667 contracts changed hands. Despite the heavy trading that day, the maximum fluctuation was only 70 points, or less than one cent a pound.

New York Rubber Exchange—High and Low Monthly Futures—Cents Per Pound



The Rubber Exchange of New York, Inc.

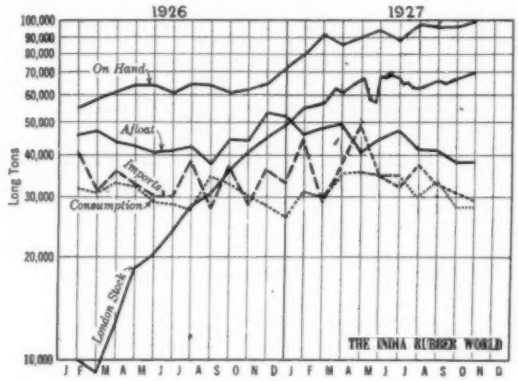
Daily Market Futures—Ribbed Smoked Sheets—Closing Prices—Cents Per Pound

1927	September 26	27	28	29	30	October 1	3	4	5	6	7	8	10	11	12*	13	14	15	17	18	19	20	21	22
October	33.3	33.6	33.9	33.7	33.4	33.3	33.0	33.5	33.3	33.6	33.5	33.5	33.6	33.8	...	33.8	33.9	34.1	34.1	34.3	34.0	34.0	34.1	34.1
November	33.5	33.6	34.0	33.7	33.4	33.4	33.0	33.4	33.3	33.6	33.4	33.5	33.6	33.7	...	33.6	33.6	33.8	33.8	34.3	34.0	34.0	34.1	34.2
December	33.7	34.0	34.1	33.8	33.5	33.3	33.0	33.6	33.5	33.7	33.6	33.6	33.7	33.8	...	33.8	33.9	34.1	34.1	34.6	34.3	34.2	34.5	34.4
1928																								
January	33.8	34.1	34.3	34.0	33.7	33.6	33.2	33.7	33.6	33.8	33.8	33.7	33.7	33.9	...	33.9	34.0	34.2	34.2	34.7	34.4	34.4	34.7	34.6
February	34.1	34.2	34.4	34.2	33.8	33.8	33.4	33.9	33.8	33.9	33.9	33.8	33.9	34.1	...	34.1	34.2	34.4	34.4	34.9	34.6	34.5	34.8	34.7
March	34.4	34.4	34.6	34.4	34.0	33.9	33.6	34.2	34.1	34.2	34.2	34.1	34.1	34.3	...	34.3	34.4	34.6	34.6	35.2	34.8	34.7	34.9	34.8
April	34.5	34.6	34.8	34.5	34.1	34.0	33.8	34.4	34.2	34.4	34.4	34.3	34.3	34.4	...	34.4	34.6	34.7	34.7	35.3	35.0	34.9	35.0	34.9
May	34.6	34.8	34.9	34.6	34.2	34.1	34.0	34.6	34.3	34.5	34.5	34.4	34.5	34.6	...	34.7	34.7	34.8	34.8	35.4	35.2	35.0	35.1	35.0
June	34.7	34.9	35.1	34.9	34.4	34.3	34.2	34.8	34.6	34.7	34.7	34.6	34.7	34.8	...	34.8	34.9	35.0	35.0	35.6	35.4	35.3	35.3	35.2
July	34.8	35.0	35.4	35.0	34.5	34.7	34.5	35.0	34.8	34.8	34.8	34.8	34.8	35.1	...	35.1	35.1	35.2	35.2	35.8	35.7	35.4	35.6	35.5
August	35.0	35.2	35.4	35.2	34.7	34.8	34.6	35.2	35.0	35.0	35.0	35.0	35.0	35.2	...	35.2	35.3	35.4	35.4	36.0	35.8	35.6	35.8	35.7
September	...	...	...	...	...	35.0	34.8	35.4	35.2	35.2	35.2	35.2	35.2	35.4	...	35.4	35.5	35.6	35.6	36.2	36.0	35.8	36.0	35.9

*Holiday.

Imports, Consumption and Stocks

The accompanying graph covers the crude rubber supply, consumption, and stocks for 1926 and the first ten months of 1927. Stocks on hand in the United States increased 1,681 tons to 97,829 on September 30. It is estimated that they will rise to 99,800 tons October 31 as tire manufacturing schedules were seasonally reduced the past month.



U. S. Imports, Consumption, Stocks, 1926-1927

Imports and consumption in October, 1927, are estimated respectively at 29,000 and 27,000 tons. London stocks increased from September 24 to October 15 by 3,366 tons to a total of 70,916 tons and declined the following week to 70,060 tons.

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

			Stocks			Singapore and Penang
1925	Imports Tons	Consumption Tons	On Hand† Tons	Afloat† Tons	London Tons	Tons†
Twelve months	384,837	389,136	51,000*	48,000*	.....	.....
1926						
Twelve months	411,900	358,415	72,510*	52,019*	.....	.....
1927						
January	45,736	31,500	76,171	45,218	54,786	26,443
February	29,446	29,000	76,000	48,000	56,962	26,756
March	39,500	36,100	91,086	49,597	63,167	27,844
April	48,700	35,900	92,800	39,000	67,034	24,543
May	36,569	34,590	94,600	44,200	56,668	25,133
June	33,194	33,800	89,250	47,233	64,486	21,898
July	38,667	29,219	98,469	40,587	63,626	18,674
August	33,068	33,460	96,148	40,937	64,842	21,764
September	32,798	27,214	97,829	37,966	68,519	25,178
Oct. 25 (est.)	29,000	27,000	99,800	38,000	.....	.....

* December 31, 1925 and 1926.
† The first of each month.

Ceylon Rubber Exports

Jan. 1 to July 31, 1927

	Tons
To United Kingdom	8,602.70
Continent	1,418.17
Australia	778.31
America	20,305.74
Egypt	6.00
Africa	59.52
India	14.77
Japan	115.69
Total	31,300.90
For the same period last year	30,589.79

ANNUAL EXPORTS 1921-1926

	Tons
For the year 1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

A NEW ANTI-OXIDANT

The material known as Stabilite has the characteristic not only of preventing oxidation but also of retarding sun checking of rubber goods. It has also the property of dispersing carbon black in rubber mixing and of acting as a softener evident in the improvement it effects in tubing stocks. The variability of carbon blocks in their absorptive tendency toward organic accelerators is corrected by the use of Stabilite with conservation of accelerator and maintenance of its full effect.

Reclaimed Rubber Market

The demand for reclaim has exhibited a pronounced increase over one month ago and the outlook for further improvement in business is very promising. There has been a notable increase in the use of reclaim in both red and gray inner tubes due to manufacturers realizing the economy and technical qualifications of this material for compound inner tubes whether wrapped or molded. Competition is keen in the reclaim industry and the output is on full capacity schedule. Large tonnage of reclaim finds a well maintained outlet in third line non-guaranteed tires.

Quotations on all grades of reclaim remain unchanged from a month ago, making two months of steady prices.

New York Quotations

October 25, 1927

	Specific Gravity	Price per Pound
Auto Tire		
Black	1.21	$0.08 @$0.08½
Black, washed	1.18	.10 @ .10¼
Black selected tires	1.20	.08¾ @ .09
Dark gray	1.35	.11¼ @ .12
Light gray	1.38	.13 @ .13¼
White	1.40	.15 @ .15½
High Tensile		
Super-reclaim, No. 1 Black	1.20	.17½ @ .18
No. 2 Black	1.20	.14 @ .14½
High tensile red	1.20	.14 @ .14½
Shoe		
Unwashed	1.60	.08 @ .08¼
Washed	1.50	.10¼ @ .10¾
Tube		
No 1	1.00	.17 @ .17½
No. 2	1.18	.13½ @ .14½
Miscellaneous		
Red	1.35	.14 @ .14½
Truck tire, heavy gravity	1.55	.07½ @ .07¾
Truck tire, light gravity	1.40	.08 @ .08¼
Mechanical blends	1.60	.07 @ .08

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya during the month of September last totaled 29,835 tons. The amount of rubber imported was 12,095 tons of which 9,375 tons were declared as wet rubber. The following are comparative statistics:

	1926		1927	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	30,452	10,237	34,946	14,995
February	30,440	8,306	27,528	11,697
March	35,012	14,800	41,346	17,462
April	23,727	10,565	29,041	13,069
May	31,231	10,604	31,393	15,491
June	30,624	11,764	32,607	14,706
July	28,824	15,280	23,947	12,697
August	34,625	13,595	30,371	17,105
September	35,913	13,972	29,835	12,095
Totals	280,848	109,123	281,014	129,317

Note—The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya, and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of August and September, 1927:

	August, 1927 Tons	September, 1927 Tons
United Kingdom	8,023	6,075
United States of America	17,382	16,926
Continent of Europe	2,502	4,318
British Possessions	521	709
Japan	1,925	1,793
Other foreign countries	18	14
Totals	30,371	29,835

WHY HARD FINE PARA AGES WELL

The good aging attributed to products of hard fine Para is due not so much to phenolic substances developed in smoking the rubber, according to Dr. Samuel S. Pickles, British rubber chemist, as it is to the presence of serum solids, the rubber being produced from whole latex and not being washed or creped.

The Market for Rubber Scrap

October business in rubber scrap was good and the demand very active especially in inner tubes and tires for prompt delivery. Collections were only moderate because of rainy weather and the group of Jewish holidays added to Columbus Day.

AIR BRAKE HOSE. The demand continues very good. The prices of mixed and white tires advanced from $1 to $2 a ton.

BOOTS AND SHOES. Prices on the principal grades advanced slightly. The balance of the list was unchanged. The demand was very good.

INNER TUBES. These grades were well supported by a very active demand for inner tube reclaims. Collections in October were moderate and dealers' prices are well maintained.

MECHANICAL GRADES. The demand is fair. Quotations remain unchanged from a month ago except for heels and air brake hose which have made a pronounced advance.

TIRES. The demand for tires is good and prices unchanged.

Quotations for Carload Lots

October 25, 1927

Boots and Shoes		
Boots and shoes, black	lb.	$0.01½ @ $0.019
Red and white	lb.	.01 @ .0115
Trimmed arctics, black	lb.	.00¾ @ .01
Untrimmed arctics	lb.	.00¾ @ .01
Tennis shoes and soles	lb.	.01 @
Hard Rubber		
No. 1 hard rubber	lb.	.09½ @ .10
Battery jars, black compound	lb.	.01⅞ @ .02
Inner Tubes		
No. 1, floating	lb.	.07¼ @ .07½
No. 2, compounded	lb.	.05⅛ @ .05⅜
Red	lb.	.06 @ .06¼
Mixed tubes	lb.	.05 @
Mechanicals		
Mixed black scrap	lb.	.00¾ @ .00⅞
Heels	lb.	.00½ @ .00⅝
Hose, air brake	ton	33.00 @ 35.00
regular soft	ton	17.50 @
No. 1 red	lb.	.01¾ @ .01⅞
No. 2 red	lb.	.01 @
White, druggists' sundries	lb.	.02½ @ .03
Mechanical	lb.	.01½ @ .01⅝
Tires		
Pneumatic Standard—		
Mixed auto tires with beads	ton	23.00 @ 24.50
Beadless	ton	32.00 @ 33.50
White auto tires with beads	ton	40.00 @ 42.00
Beadless	ton	50.00 @ 52.00
Mixed auto peelings	ton	32.00 @ 33.00
Solid—		
Mixed motor truck, clean	ton	25.00 @ 26.00

World Rubber Production—Net Exports

Long Tons—1927

	April	May	June	July	August	Sept.
British Malaya	15,972	15,902	17,901	11,250	13,266	17,740
Ceylon	3,349	3,124	3,348	4,018	5,357	.....
India and Burma	723	760	856	827	688	.....
Sarawak	984	786	1,100	859	1,133	645
British Borneo	*500	*500	*500	*500	*500	.....
Siam	526	348	409	333	546	498
Java and Madura	4,666	5,430	4,818	4,771	4,355	.....
Sumatra East Coast	5,530	5,528	5,519	6,140	6,683	.....
Other D. E. Indies	10,035	14,099	9,402	11,663	12,054	.....
French Indo-China	557	586	772	519	716	497
Amazon Valley	2,374	2,431	1,030	1,713	2,004	2,474
Other America	177	153	330	.....	.....	.....
Mexican Guayule	491	399	400	399	348	.....
Africa	827	655	976	.....	.....	.....
Totals	46,711	50,701	47,361	.....	.....	.....

*Estimate.

Plantation Rubber Exports from Malaya*

January 1 to August 31, 1927

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	6,117.91	8,329.45	6,010.93
British Possessions	2,600.53	91.31	58.31
Continent of Europe	9,014.51	1,301.90	2,026.21
United States	106,640.22	18,990.16	8,132.82
Japan	8,053.58	1,814.50	1,760.00
Other Countries	66.95	.....	.....
Totals	132,493.70	30,527.32	17,988.27

*Excluding all foreign transhipment.

United States Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	July, 1927 Pounds	July, 1927 Value	Seven Months Ended July, 1927 Pounds	Seven Months Ended July, 1927 Value
UNMANUFACTURED—*Free*				
Crude rubber	84,397,110	$31,678,259	583,820,698	$216,391,147
Balata	60,186	22,133	657,433	238,452
Jelutong or Pontianak	1,367,151	171,719	9,944,683	1,502,840
Gutta percha	293,463	60,840	1,919,835	386,968
Guayule	895,359	206,928	6,469,741	1,552,538
Rubber scrap	857,796	34,428	12,418,992	560,952
Totals	87,871,065	$32,174,307	615,231,382	$220,632,897
Chicle *dutiable*	418,442	$202,061	7,772,190	$3,924,263
MANUFACTURED—*dutiable*				
Rubber belting	33,121	$19,062	372,807	$226,029
Rubber tires	421	2,539	2,231	40,773
Other manufactures of rubber	.....	123,768	.....	784,571
Totals	33,542	$145,369	375,038	$1,051,373

EXPORTS OF FOREIGN MERCHANDISE

RUBBER MANUFACTURES				
Crude rubber	4,385,791	$1,560,853	33,219,630	$14,013,128
Balata	6,811	2,740	51,629	20,658
Gutta percha and rubber substitutes and scrap	23,520	7,797	94,990	13,682
Rubber manufactures	.....	3,266	.....	194,910
Totals	4,416,122	$1,574,656	33,366,249	$14,242,378

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
India Rubber				
Reclaimed	1,509,051	$139,358	12,031,592	$1,195,606
Scrap and old	2,160,185	116,360	16,509,436	1,020,648
Footwear				
Boots *pairs*	98,112	233,261	311,787	825,208
Shoes *pairs*	201,173	171,555	712,195	602,804
Canvas shoes with rubber soles *pairs*	372,199	249,985	3,148,009	2,126,597
Rubber water bottles and fountain syringes *number*	39,821	34,620	160,662	111,363
Rubber gloves *doz. pairs*	8,606	17,475	43,800	134,636
Other druggists' rubber sundries	.....	69,549	.....	269,886
Bathing caps *doz.*	16,373	39,437	129,158	265,341
Hard rubber goods				
Electrical hard rubber goods	112,002	29,062	663,359	164,044
Other hard rubber goods	.....	28,678	.....	233,830
Tires				
Casings, automobile *number*	248,718	3,340,659	1,672,644	21,293,573
Tubes, automobile *number*	158,147	357,492	963,139	2,022,794
Other casings and tubes, *number*	7,071	19,889	32,098	94,412
Solid tires for automobiles and motor trucks *number*	7,834	244,779	61,484	1,895,585
Others	191,676	48,896	908,006	233,989
Tire accessories	.....	153,313	.....	1,050,814
Rubber and friction tape	119,833	38,440	903,190	267,058
Belting	382,224	201,731	2,813,706	1,499,944
Hose	763,515	272,575	4,321,492	1,644,381
Packing	232,232	103,735	1,455,833	655,360
Soles and heels	394,832	118,676	2,622,068	821,409
Thread	99,144	126,966	884,460	1,125,620
Rubber bands and erasers	80,983	56,892	507,692	371,149
Other rubber manufactures	.....	206,043	.....	1,433,517
Totals	.....	$6,419,426	.....	$41,360,018
Rubber toys and balls	.....	$15,913	.....	$104,257
Rubber balloons *gross*	35,502	$46,927	305,191	$396,670

World Rubber Absorption—Net Imports

Long Tons—1927

	April	May	June	July	August
Australia	762	694	557	900	650
Belgium	448	633	575	436	604
Canada	1,509	2,519	2,086	2,104	....
Czechoslovakia	218	223	183	236	....
Denmark	27	75	20	43	....
Finland	34	76	39	43	....
France	2,310	2,006	2,387	2,385	2,795
Germany	2,393	3,380	3,632	2,946	3,119
Italy	781	818	942	1,007	....
Japan	2,181	1,084	798	1,505	....
Netherlands	58	—57	—16	66	—63
Norway	33	42	71	....	....
Russia	1,972	887	1,506	415	386
Spain	177	155	164	177	....
Sweden	136	142	113	102	172
United Kingdom	7,875	2,896	2,282	1,116	3,463
United States	44,627	33,761	31,270	35,720	31,001
United States (Guayule)	491	399	400	399	348
Totals	66,032	49,847	47,041	....	....

—Minus quantity: excess of exports over imports.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

CRUDE RUBBER, INCLUDING LATEX, IS FOURTEENTH ON THE LIST of chief imports from January-June, 1927, according to *Our World Trade*. A 7.9 per cent gain is noted, the 1927 figure being 499,424,000 against 462,834,000 for 1926.

Compounding Ingredients Market

ALTHOUGH the output of tires is proceeding on the usual seasonally reduced schedule the general demand for compounding ingredients is well maintained.

ACCELERATORS. The tendency to utilize low temperatures is gaining ground. The demand for semi-ultra accelerators is well established and steadily increasing in volume.

ANTI-OXIDANTS. The two latest additions to the list of anti-oxidants available for rubber work are Neozone and Stabilite.

BENZOL. The demand is increasing, production is well sustained and prices are shaded.

CARBON BLACK. Business has been active in all lines of carbon black consumption. Producers and consumers are discussing contracts for 1928.

DEGRAS. While not formerly unknown in rubber work degras is now offered as a softener of exceptional efficiency for the dispersion of reinforcing pigments in compounding and for its value in reclaiming.

LITHARGE. Corroders have extended their guarantee against a decline in prices on stocks bought from October 20 on to January 31, 1928.

LITHOPONE. The demand against contracts was well maintained. Prices remain steady. Contract prices for 1928 are not yet announced.

MINERAL RUBBER. This material continues in steady movement at large tonnage.

SOLVENT NAPHTHA. Prices unchanged in fairly active market. Stocks are reported liberal in volume.

STEARIC ACID. The market holds strong, prices firm and demand active. Specifications for stearic acid have been adopted by the National Association of Stearic Acid Manufacturers.

ZINC OXIDE. Trade in general is holding up well although the demand from the rubber industry has eased off some. The bulk of the production for the balance of the year 1927 is reported as sold.

New York Quotations

October 25, 1927

Accelerators, Inorganic

Lead, carbonate	lb.	$0.09	@
Lead, red	lb.	.09¼	@
sublimed white	lb.	.08¼	@
sublimed blue	lb.	.08¼	@
super-sublimed white lead	lb.	.08¼	@
Lime, R. M. hydrated	ton	12.80	@
Litharge	lb.	.08¼	@
Magnesia cal., light	lb.	.05	@
calcined, extra light	lb.	.30	@
calcined, heavy	ton	75.00	@
magnesium, carb., light	lb.	.06	@ .07
Orange mineral A.A.A	lb.	11¼	@

Accelerators, Organic

A-7	lb.	.65	@ .85
A-11	lb.	.70	@ .90
A-16	lb.	.65	@ .85
A-19	lb.	.70	@ .90
Aldehyde ammonia	lb.	.65	@ **.70**
B. B.	lb.		@
Captax	lb.		@
Crylene, hard form	lb.	.70	@
Paste	lb.	.50	@
Di-ortho-tolylguanidine	lb.	.85	@ .90
Diphenyl guanidine	lb.	.68	@ .72
Ethylidine aniline	lb.	.60	@ .65
Formaldehyde aniline	lb.	.38	@ .42
P. A. C.	lb.	.08½	@ .09
Grasselerator 102	lb.	.65	@ **.70**
552	lb.	4.45	@ 4.60
808	lb.	1.05	@ **1.35**
833	lb.	1.55	@ 1.75
Heptene	lb.		@
Hexamethylene tetramine	lb.	.62½	@ .67½
Lithex	lb.	.18	@ .20
Methylene dianiline	lb.	.37	@
Monex	lb.	3.25	@
No. 999 lead oleate	lb.	.16	@
Phenyl orthotolyl guanidine	lb.	.76½	@ .81
Piperidine piperidyl dithio carbamate	lb.	4.45	@ 4.60
R. & H. 40	lb.	.50	@ .55
50	lb.	.50	@ .55
Safex	lb.	1.20	@ 1.25
Super-sulphur, No. 1	lb.	.50	@
No. 2	lb.	.18	@ .22
Tensilac No. 39	lb.	.55	@ .60
No. 41	lb.	.65	@ .70
Thionex	lb.		@
Thiocarbanilid	lb.	.26	@ .28½
Trimene	lb.		@
base	lb.		@
Triphenylguanidine	lb.	.65	@ **.70**
Tuads	lb.	3.25	@
Vulcanex	lb.		@
Vulcanol	lb.		@
Vulcone	lb.	.70	@
Z-88	lb.	.75	@ 1.00
Zimate	lb.	4.00	@

Acids

Acetic 28% (bbls.)	100 lbs.	3.37½	@ 3.62½
glacial (carboys)	100 lbs.	12.41	@12.66
Sulphuric, 66°	100 lbs	1.375	@

Alkalies

Caustic soda, solid	lb.	$0.03	@

Anti-Oxidants

Age-Rite, powder	lb.	.55	@
resin	lb.	.65	@
Antox	lb.	.77	@
Neozone	lb.	.74	@
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.07	@ .21
Carbon (see Comp. Ing.)			
A. & W. nonfli No. 1	lb.	.40	@
No. 2	lb.	.25	@
Drop	lb.	.06	@ .10
Lampblack (commercial)	lb.	.09	@

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Du Pont, N	100 lbs.	1.35	@
Marine, A. C.	100 lbs.	1.30	@
5 R.	100 lbs.	1.00	@
2 G.	100 lbs.	.90	@
Prussian	lb.	.31	@ .35
Ultramarine	lb.	.06	@ .30

BROWN

Sienna, Italian, raw	lb.	.05	@ .12½

GREEN

A. & W. green	lb.	1.25	@ 3.00
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
dark	lb.	.30	@ .33
Du Pont, A. C.	100 lbs.	3.00	@
4 G.	100 lbs.	.60	@
G. L.	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Oxide of chromium	lb.	.38	@

ORANGE

Du Pont, 2 R	100 lbs.	1.40	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@

RED

A. & W. red	lb.	.75	@ 3.50
purple	lb.	2.00	@ 4.00
Antimony, golden, No. 40	lb.	.22	@ .25
No. 60	lb.	.16	@ .20
golden 15/17%	lb.	.16	@ .20
T. K. "Special" 1%	lb.		@
Pentasulphide 15/17%	lb.		@

Colors—*(Continued)*

Antimony

Crimson, R.M.P. No. 3	lb.	$0.48	@
Sulphur free	lb.	.52	@
T. K. 15/17%	lb.		@
7-A.	lb.	.35	@
Z-2	lb.	.22	@
Vermilion, No. 5	lb.		@
No. 15	lb.		@
Du Pont, R. I	100 lbs.	2.00	@
6 B.	100 lbs.	1.10	@
Brilliant A. C.	100 lbs.	1.05	@

Iron Oxides

bright pure domestic	lb.	.12	@
bright pure English	lb.	.14	@
bright reduced English	lb.	.10½	@
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.10½	@ .11
Indian (maroon), reduced English	lb.	.09½	@ .10
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.04	@
Venetian reds	lb.	.02	@ .06
Vermilion, English quicksilver	lb.	1.85	@

WHITE

Lithopone	lb.	.05⅝	@ .05⅞
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05⅜	@ .05¾
Sterling	lb.		@
Zinc Oxide			
AAA (lead free)	lb.	.06½	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06⅜	@ .07⅛
Z (8% leaded)	lb.	.06½	@ .07⅛
French Process			
Green seal	lb.	.10⅞	@
Red seal	lb.	.09⅞	@
White seal	lb.	.11⅞	@

YELLOW

A. & W. yellow	lb.	2.00	@ 4.00
T. K. sulphide	lb.	.65	@
Cadmium sulphide	lb.	1.30	@ 2.00
Chrome	lb.	.17	@ .20
Du Pont N	100 lbs.	4.00	@
R. R.	100 lbs.	1.55	@
Grasselli cadmium	lb.	1.50	@
Ochre, domestic	lb.	.01¾	@ .02¼
Oxide, pure	lb.	.10½	@
Zinc imported	lb.	.24	@

New York Quotations

October 25, 1927

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	$21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate powd.	lb.	.11	@
lump	lb.	.10	@
Asbestine	ton	13.50	@14.50
Barium, carbonate	ton	50.00	@55.00
dust	lb.		@
sulphate, dry	lb.		@
Barytes, imported	ton	27.00	@34.00
dry ground, white	ton	16.00	@
dry ground, off color	ton	12.00	@
No. 1 Missouri, water ground and floated, St. Louis	ton	21.60	@23.00
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04½	@
pulp	ton	60.00	@63.00
Carbon Black			
Aerfloted arrow	lb.	.08 @	.12
Compressed	lb.	.07½ @	.11½
Uncompressed	lb.	.07 @	.11
Micronex	lb.	.08 @	.12
Carrara filler	ton	26.00	@
Chalk, precipitated	lb.	.04½ @	.04¾
Clay, Blue Ridge, dark	ton	9.00	@
Blue Ridge, light	ton	12.00	@
China	lb.	.01½	@
Dixie	ton	15.00	@
Langford	ton	10.00	@
Mineral flour (Florida)	ton	20.00	@23.00
Perfection	ton	14.60	@
Suprex	ton	13.00	@26.00
Cotton flock, black	lb.	.10 @	.11
light-colored	lb.	.10 @	
white	lb.	.12 @	.30
Fossil flour	lb.	.02½	@
Glue, high grade	lb.	.22 @	.26
low grade	lb.	.18 @	.22
Infusorial earth	lb.	.02½	@
Mica, amber (fact'y)	ton	80.00	@
Pumice stone, powd.	lb.	.02½ @	.04
Rotten stone (bbls.)	lb.	.02½ @	.04½
Soap bark	lb.	.16 @	.18
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	18.00	@25.00
French	ton	18.00	@22.00
Pyrax A	ton	7.50	@
B	ton	12.00	@
Thermatomic carbon	lb.	.05	@
Titanox	lb	.10 @	.10½

Compounding Ingredients—*(Continued)*

Velvetex	lb.	$0.04	@$0.07
Whiting:			
Commercial	100 lbs.	.85 @	1.00
English, cliffstone	100 lbs.	1.50 @	
Quaker	ton	13.00 @	
Snow white	ton	12.00	@23.00
Sussex	ton	8.00 @	
Westminster Brand	100 lbs.	@	
Witco (c.l.) (fact'y)	ton	12.00 @	
Whiting, imp. chalk	100 lbs.	1.00 @	1.25
Paris White, Eng. Cliff.	100 lbs.	1.50 @	2.50

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.	.05 @	.06
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton	33.00	@38.00
Hydrocarbon, hard	ton	28.00	@34.00
Hydrocarbon, soft	ton	28.00	@34.00
Ohmlac Kapack, M. R.	ton	40.00	@90.00
M-4	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	25.00	@33.00
M. R. granulated	ton	34.00	@39.00
Robertson, M. R., solid (fact'y)	ton	34.00	@38.00
M. R. gran. (fact'y)	ton	34.00	@80.00

Oils

Mineral	gal.	.18 @	
Spindle	gal.	.28 @	
Kerosene	gal.	.15 @	
Rapeseed	gal.	.83 @	
Red oil, distilled	gal.	.72 @	
Rubber process	gal.	.28 @	

Rubber Substitutes or Factice

Black	lb.	.08 @	.14
Brown	lb.	.08 @	.15
White	lb.	.09 @	.16½

Softeners

Burgundy pitch	lb.	.06 @	
Corn oil	lb.	.12 @	
Cotton oil	lb.	.12 @	
Cycline oil	gal.	.28 @	.35
Degras	lb.	.03¼ @	.04
Fluxrite (fluid)	lb.	.05 @	.06
Palm oil (Lagos)	lb.	.09½ @	
Palm oil (Niger)	lb.	.09 @	
Palm oil (Witco)	lb.	.08½ @	

Softeners—*(Continued)*

Petrolatum	lb.	$0.05¼ @	
Pigmentar	gal.	.33 @	.38
Pine oil	gal.	.67 @	.69
Pine tar (retort)	bbl.	13.00	@14.00
Plastone	lb.	.36 @	
Rosin K	bbl.	9.00 @	
Rosin oil	gal.	.45 @	
Rubtack	lb.	.08½ @	
Tackol	lb.	.09 @	.16
Shellac, orange	lb.	.70 @	
Stearex	lb.	.12 @	.16
Stearic acid (double press'd)	lb.	.13¾ @	.12¾

Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.28 @	
Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums)	lb.	.05 @	.06
tetrachloride (99.7%, 13.28 lbs. gal.) (drums)	lb.	.06¼ @	
Gasoline No. 303			
Tankcars	gal.	.15 @	
Drums, c. l.	gal.	.27 @	
Drums, l. c. l.	gal.	.30 @	
Solvent naphtha	gal.	.40 @	
Turpentine, spirits	gal.	.54 @	.55
steam distilled	gal.	.50 @	.52

Vulcanizing Ingredients

Sulphur			
Velvet flour (bbls.) 240 lbs		2.95 @	3.50
(bags) 150 lbs.		2.60 @	3.15
Soft rubber (c.l.) 100 lbs.		@	
(l.c.l.) 100 lbs.		@	
Superfine commercial flour (bbls.) 210 lbs.		2.55 @	3.10
(bags) 100 lbs.		2.20 @	2.80
Tire brand, superfine. 100 lbs.		@	
Tube brand, velvet. 100 lbs.		@	
Vandex	lb.	1.75 @	
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.	lb.	.55 @	
carnauba	lb.	.33 @	.50
ceresine, white	lb.	.12 @	
montan	lb.	.07 @	.07½
orokerite, black	lb.	.27 @	
green	lb.	.28 @	
Paraffin			
122/124 white crude scale.	lb.	.03¼ @	
124/126 white crude scale.	lb.	.03¼ @	
123/125 fully refined	lb.	.04¼ @	
125/127 fully refined	lb.	.04½ @	

STEARIC ACID AND RED OIL STANDARDS

Specifications for stearic and oleic (red oil) acids have been adopted by the National Association of Stearic Acid Manufacturers. The association, whose secretary is F. F. Jordan, Emory Candle Co., Cincinnati, Ohio, has invited inquiries as to the methods by which the tests are arrived at. The specifications follow:

SINGLE-PRESSED STEARIC ACID

Melting point—126 to 127 degrees F. (52.2 to 52.75 degrees C.) Iodine value—not over 12. Construction—needle point crystalline.

DOUBLE-PRESSED STEARIC ACID

Melting point—128 to 129 degrees F. (53.3 to 53.9 degrees C.) Iodine value—not over 8. Construction—needle point crystalline.

TRIPLE-PRESSED STEARIC ACID

Melting point—130 to 131 degrees F. (54.4 to 55 degrees C.) Iodine value—not over 6. Construction—needle point crystalline.

DOUBLE-DISTILLED RED OIL

Titre—10-13 degrees. Unsaponifiable, 5 per cent or under. Moisture and unsoluble, 5 per cent. Iodine value, 90 or under. Color, not over 3 N. P. A.

DISTILLED RED OIL

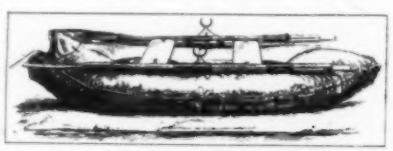
Regular—Titre, 7-10 degrees. Unsaponifiable, 5 per cent or under. Moisture and insoluble, 5 per cent. Iodine value, 90 or under.

Medium—Titre, 15-20 degrees. Unsaponifiable, 5 per cent or under. Moisture and insoluble, 5 per cent. Iodine value, 84 or under.

Heavy—Titre, 30-35 degrees. Unsaponifiable, 5 per cent or under. Moisture and insoluble, 5 per cent. Iodine value, 70 or under.

A RUBBER BOAT OF ANCIENT VINTAGE

An ancient rubber boat is the latest find of a certain contributer to the *Gummi-Zeitung*, who delights to delve into the past of the rubber industry and from time to time publishes his discoveries in the above paper. This rubber boat, the product of the factory of F. C. Baumchen of Dresden, was found described in the June 29,



Boat Made in 1872

1872, issue of the German *Illustrierte Zeitung*, and seems to have been collapsible and inflatable. It was to be rowed and intended among other things to be used as a life boat. It was claimed for the contraption that it could easily and rapidly be collapsed and rolled into a compact package; that one man could carry it on his back without difficulty; and furthermore that it could not become leaky as its elasticity was such that it yielded to any kind of resistance!

ANTI-OXIDANTS IN COLD PROOFING

While anti-oxidants are effective in waterproofed fabrics cured in dry heat, their use for cold cured proofings has not been tried commercially, but experimenting is being done, according to J. Lloyd, rubber technician, Manchester, England.

THE

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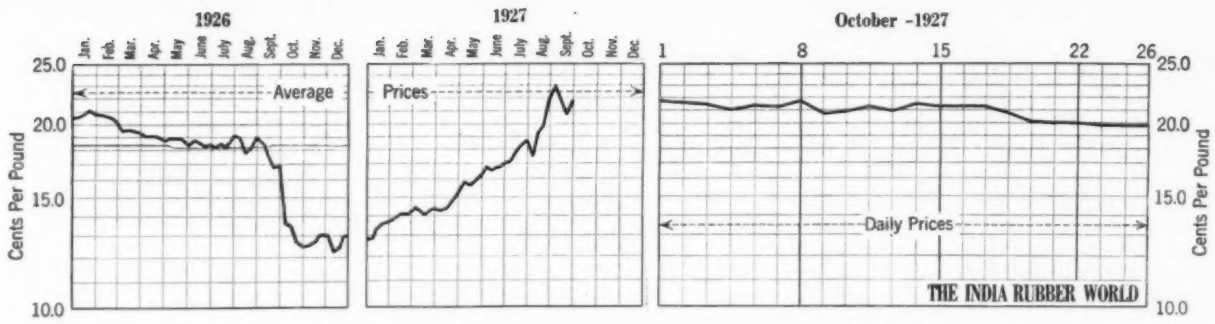

Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

Market for Cotton and Fabrics

AMERICAN COTTON. The price for spot middling cotton on October 1 was 21.80 cents as compared with 23.10 cents on September 1. The price fluctuated narrowly around 21 cents for the first three weeks of October following which a rather sudden decline occurred to the 20-cent level. For the most part the price of spot middlings ran consistently lower in October than in September. The average price for the first three weeks of October was 20.63 cents while for the corresponding period of September it was 21.97 cents.

The government crop report of October 8 placed the yield at 12,678,000 bales. This was below the average expectations and caused a brief advance in the market which failed to hold. The expert view seems to indicate continuance of the decline into November.

EGYPTIAN COTTON. Staple markets have eased somewhat in sympathy with New York future contracts and owing to lack of keen buying interest on the part of spinners. The basis, however, remains exceedingly firm and may easily continue so for some time as it is the fine goods end of the cotton industry which is enjoying the bulk of the present prosperity in textiles. There has recently been a large difference of opinion as to the size of the Egyptian crop, but present indications are for 6,250,000 to 6,500,000 cantars. Actual receipts of cotton to date indicate that the character and staple of Sakel is superior to last year and that this season's Uppers are satisfactory. Sakels are quoted at 38 cents and Medium Uppers at 31 cents a pound.

ARIZONA COTTON. In Arizona the present crop is being picked rapidly and consists principally of high grades. No. 2 Pimas are quoted at 41 cents a pound.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The outstanding feature of the market is the annual decline in staple price at this season during the peak of the crop movement to market. A sharp check to this tendency may be looked for before many weeks, with probability of gradually advancing prices of cotton into the spring planting season and very likely beyond. A good class of buying is current in the fabric market involving contract deliveries over the next six months. A steady demand for cloths is predicted. Mechanical ducks are active and contracts are booked into the first quarter of next year.

RAINCOAT FABRICS. The raincoat trade is very busy at the present time, in fact most factories are working nights and judging by the orders they now have this condition will continue at least to January 1. All have some new ideas for spring but samples will not be shown until after the first of the year.

New York Quotations

October 25, 1927

Drills

38-inch 2.00-yard	yard	$0.19½@
40-inch 3.47-yard		.11⅝@
50-inch 1.52-yard		.25⅝@
52-inch 1.90-yard		.21⅛@
52-inch 2.20-yard		.18⅛@
59-inch 1.85-yard		.21⅝@

Ducks

38-inch 2.00-yard S. F.	yard	.19¼@
40-inch 1.45-yard S. F.		.26⅞@
72-inch 1.05-yard D. F.		.38⅛@
72-inch 16.66-ounce		.41⅝@
72-inch 17.21-ounce		.43⅛@
MECHANICAL		
Hose and belting	pound	.38 @
Specials		.42 @
TENNIS		
52-inch 1.35-yard	yard	.29 @

Hollands

RUBBER TRADE SPECIAL R. T. 3 A.		
31-inch	yard	.20 @
40-inch		.25 @
50-inch		.45 @
RED SEAL		
36-inch		@
40-inch		@
50-inch		@
GOLD SEAL		
40-inch, No. 72		@
40-inch, No. 80		@

Osnaburgs

40-inch 2.35-yard	yard	$0.16¾@
40-inch 2.48-yard		.15⅝@
40-inch 3.00-yard		.12⅝@
37-inch 2.42-yard		.15⅞@

Raincoat Fabrics

COTTON		
Bombazine 60 x 64	yard	.12½@
Bombazine 60 x 48		.11½@
Plaids 60 x 48		.12¼@
Plaids 48 x 48		11¼@
Surface prints 60 x 48		.12¾@
Surface prints 60 x 64		.14 @
Print cloth 38½-inch, 60 x 64		.08¾@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.14¼@
48 x 48, 2.85-yard		.12¾@
64 x 68, 3.15 yard		.13½@
56 x 60, 3.60-yard		.11¾@
44 x 48, 3.75-yard		.10 @.10¼

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.08¼@.08¾
40 x 44, 6.15-yard		.06½@

Tire Fabrics

SQUARE WOVEN 17¾-ounce		
Egyptian, karded	pound	$0.49 @
Peeler, karded		.47½@
BUILDER 23/11		
Peeler, karded		.45 @
BUILDER 10/5		
Peeler, karded		.42 @
CORD 23/5/3		
Egyptian, combed	pound	.60 @
Egyptian, karded		.55 @
Peeler, karded, 1⅛-in		.45 @
CORD 23/4/3		
Peeler, karded	pound	.48 @
CORD 23/3/3		
Peeler, karded	pound	.43½@
CORD 13/3/3		
Peeler, karded	pound	.43 @
CORD 13/3/3		
Peeler, karded	pound	.42 @
LENO BREAKER		
8-oz. Peeler, karded	pound	.45 @
10-oz. Peeler, karded		.45½@
CHAFER		
9.5-oz. Peeler, karded	pound	.39 @
12-oz. Peeler, karded		.40 @
[illegible] Peeler, karded		.44 @

SHEETINGS. The cotton market in the last week or 10 days has been quite erratic and for that reason many buyers have kept out of the market. For the most part southern mills are in excellent condition with plenty of orders booked for the remainder of the year and into the first quarter of 1928. Because of this condition there will be stability of prices.

TIRE FABRICS. The present conditions in the market are that during the last few weeks prices have been demoralized due apparently to the fact that transition from the old crop year to the new one has not been accomplished without some mills running rather low on unfilled orders and becoming panicky for business to keep their spindles running. As a result tire fabric is being sold below replacement cost. On a market advancing as cotton has during the past year some mills are undoubtedly in position to do this without losing money on actual cost. There seems to be many inquiries for goods and apparently a fair volume of business is being placed but only for nearby deliveries.

The Cotton Outlook

The Cotton Textile Institute

At the second annual meeting of the Cotton Textile Institute, Inc., held October 20, 1927, at the Hotel Biltmore, New York, N. Y., Walker D. Hines was reelected president; Robert Amory of Boston, and Stuart W. Cramer, of Cramerton, North Carolina, were reelected vice presidents; Gerrish H. Milliken, of Deering, Milliken & Co., was reelected treasurer and George A. Sloan was reelected secretary.

In his address Mr. Hines reviewed the work undertaken by the organization and referred as follows to some of its features:

The Cotton-Textile Institute, since it began active service, has formed five groups of manufacturers to study the problems which concern their products. These are the wide sheetings, narrow sheetings, carded yarn, print cloth, and osnaburg groups. They are not limited to Institute members.

The general staff of the Institute, under its several experts, has begun researches on statistics of the various groups such as cost accounting, new uses for cotton goods, simplification, standardization, and specifications, and distribution of products.

The cost engineer of the Institute, after meetings with the groups, is drawing up an outline of principles for mill cost accounting; this will be submitted to outside accountants for advice and criticism, and then offered to Institute members for their aid.

The Institute, working with the Department of Commerce, has already completed a simplification of hospital and institutional textiles. It is studying government specifications.

The new uses section is probing new outlets, here and abroad.

A conference of five textile associations, besides the Institute, was called to discuss new distribution problems.

A new code of trade practices for the carded yarn group has been drawn up.

Major Activities of the Institute

The classes of work already entered upon may be enumerated as, first, statistics; second, cost accounting; third, new uses; fourth, the related matters of simplification, standardization and specifications, and, fifth, certain matters more immediately related to distribution of cotton textile products.

In the matter of statistics, the work of the Institute, as well as of the Merchants Association, is to obtain statistics showing the situation of the mills as to production, unfilled orders, and stocks on hand. In the case of wide sheetings, obstacles had developed which prevented the Merchants' Association from getting statistics for as much as 40 per cent of the production.

Through the formation of the group in the Institute we have been able to get statistics representing about 95 per cent of the production. Our wide sheetings statistics cover two additional points not heretofore covered, first, the number of looms operating, and second, a comparison of actual loom hours with standard-time loom hours. Our wide sheetings group has also been able to issue a survey of wide sheetings looms, showing their number and their widths and we believe this survey represents 98 per cent of all the wide sheetings looms.

Hemp and Cotton Yarn

A German process of producing yarns and fabrics from a 50/50 mixture of hemp and cotton should be of interest to American cotton mills. Instead of using the ancient retting process the fiber is produced from the hemp stock by a new secret dry process, reducing the production cost to but half that of cotton. The hemp fiber after being prepared from the stock by the most simple and inexpensive machines, can be run with the cotton through ordinary American or English picker, card, drawing, spinning and weaving machinery. Mixtures up to 70 per cent hemp and 30 per cent cotton have been used, and as hemp has strong, long fiber, the card waste is run again into regular mill production.

The product under the trademark "Gminder Linen" has been on the market more than four years and is constantly gaining in favor for dress goods, draperies, and other similar purposes. The fabric is of linen-like appearance but without the objectionable wrinkling feature native to retted linen. It has been produced in yarns as fine as twenty's single and as low as six's single. For dress goods and similar constructions bleached fiber is used but satisfactory progress has also been made in developing the material in the unbleached fiber for purposes where strength is the principal factor. The process is in actual operation in Germany, employing about 4,000 people, and the product's popularity is such that the production this year will very likely show 100 per cent increase over last year's output of 2,000,000 yards.

Hemp can be supplied by Germany and the Baltic States in large volume. It is already cultivated in considerable quantity in the United States and could naturally be raised in much larger volume if it proved more advantageous to grow it here than to import it, particularly since this crop is equally suited to either the northern or southern states. The Ford Motor Co. is meeting with success in its endeavors to encourage the cultivation of flax and hemp in Michigan. About 200,000 tons of hemp are imported into the United States annually at present, principally for cordage purposes. The cheapness of hemp and the fact that it can be run on cotton machinery with small adjustments at little or no expense, should prove of interest to cotton mills in America as an antidote to the condition in which the industry finds itself at the present time. It would also seem to offer an opportunity to the American farmer. The German farmer is easily induced to increase the acreage of his crop, the rate of compensation being materially greater than that received from most other crops. In addition, according to Dr. Gminder, a field grown to hemp for two years will for the following two years produce 30 per cent more of any other crop to which the field may be sown, thus proving an excellent rotation crop.

TIRE INVENTORY — PRODUCTION — DOMESTIC SHIPMENTS

Inventory on pneumatic casings and inner tubes shows a decline and production and shipments an increase during August over July, with all totals, with the exception of inventory on casings, below the figures for August, 1926.

Cotton fabric and crude rubber consumption for casings, tubes, solid and cushion tires shows a big increase in August over July.

	August, 1927		
	Inventory*	Production	Shipments
Pneumatic casings—all types	8,040,619	4,313,758	4,795,171
Inner tubes—all types	10,997,618	4,859,810	5,986,682
Balloon casings	4,231,101	2,209,580	2,413,700
Balloon inner tubes	5,610,329	1,883,417	2,445,670
High pressure cord casings	3,553,041	2,059,868	2,250,576
High pressure inner tubes	5,367,289	2,976,393	2,541,012
Solid and cushion tires	180,592	48,286	48,373

COTTON AND CRUDE RUBBER CONSUMPTION IN TIRES AND TUBES

	Pounds
Cotton fabric	16,323,399
Crude rubber	45,705,811

*As of August 31, 1927.

Rubber Association figures representing 75 per cent of the industry.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

	Cases
September 15. By "Davisian," Manchester.	
The Meyer & Brown Corp.....pkgs.	*77
September 16. By "Norwegian," England.	
Hood Rubber Co.	*14
The Meyer & Brown Corp.....pkgs.	*68
September 16. By "Silverash," Far East.	
General Rubber Co.	3,625
Haldane Bierrie & Co., Inc.	1,022
Littlejohn & Co., Inc.	3,082
The Meyer & Brown Corp.....pkgs.	1,365
H. Muehlstein & Co., Inc.	595
H. Muehlstein & Co., Inc.	*255
Raw Products Co.	476
Rogers Brown & Crocker Bros., Inc.	422
Charles T. Wilson Co., Inc.	2,051
September 17. By "Volendam," Ear Fast.	
Raw Products Co.	22
September 18. By "Mahanda," Far East.	
H. A. Astlett & Co.	1,157
Baird Rubber & Trading Co., Inc.	1,060
General Rubber Co.	953
Haldane Bierrie & Co., Inc.	150
Littlejohn & Co., Inc.	112
The Meyer & Brown Corp.....pkgs.	244
Poel & Kelly, Inc.	95
Rogers Brown & Crocker Bros., Inc.	*112
Charles T. Wilson Co., Inc.	582
September 19. By "Clan Kenneth," Far East.	
General Rubber Co.	189
Littlejohn & Co., Inc.	1,296
H. Muehlstein & Co., Inc.	30
Poel & Kelly, Inc.	140
Raw Products Co.	96
September 19. By "Franconia," London.	
Baird Rubber & Trading Co., Inc.	56
September 19. By "Minnewaska," London.	
Baird Rubber & Trading Co., Inc.	587
The Meyer & Brown Corp.....pkgs.	209
September 20. By "Stadsdyk," Far East.	
H. A. Astlett & Co.	1,761
Baird Rubber & Trading Co., Inc.	283
General Rubber Co.	5,474
Haldane Bierrie & Co., Inc.	350
Hood Rubber Co.	407
Littlejohn & Co., Inc.	3,465
The Meyer & Brown Corp.....pkgs.	1,458
Meyer & Brown, Inc.....pkgs.	54
H. Muehlstein & Co., Inc.	485
H. Muehlstein & Co., Inc.	*361
Poel & Kelly, Inc.	470
Raw Products Co.	160
Rogers Brown & Crocker Bros., Inc.	788
Charles T. Wilson Co., Inc.	2,144
September 21. By "City of Chester," Far East.	
H. A. Astlett & Co.	942
Baird Rubber & Trading Co., Inc.	400
General Rubber Co.	2,984
Haldane Bierrie & Co., Inc.	444
Adolph Hirsch & Co., Inc.	51
Hood Rubber Co.	*136
Littlejohn & Co., Inc.	2,443
The Meyer & Brown Corp.....pkgs.	845
Meyer & Brown, Inc.....pkgs.	100
The Meyer & Brown Corp.....pkgs.	*100
H. Muehlstein & Co., Inc.	943
Poel & Kelly, Inc.	471
Raw Products Co.	200
Rogers Brown & Crocker Bros., Inc.	1,200
Charles T. Wilson Co., Inc.	960
September 21. By "Corby Castle," Far East.	
H. A. Astlett & Co.	355
Baird Rubber & Trading Co., Inc.	200
General Rubber Co.	3,691
Haldane Bierrie & Co., Inc.	183
Adolph Hirsch & Co., Inc.	50
Hood Rubber Co.	*390
Littlejohn & Co., Inc.	2,439
The Meyer & Brown Corp.....pkgs.	185
H. Muehlstein & Co., Inc.	411
H. Muehlstein & Co., Inc.	*110
Poel & Kelly, Inc.	68
Rogers Brown & Crocker Bros., Inc.	250
Charles T. Wilson Co., Inc.	1,625
September 22. By "Pres. Polk," Far East.	
H. A. Astlett & Co.	1,076
Baird Rubber & Trading Co., Inc.	*498
Baird Rubber & Trading Co., Inc.	2,087
General Rubber Co.	2,066
Hood Rubber Co.	*168
Littlejohn & Co., Inc.	1,580
The Meyer & Brown Corp.....pkgs.	1,867
H. Muehlstein & Co., Inc.	610
H. Muehlstein & Co., Inc.	*85
Poel & Kelly, Inc.	210
Raw Products Co.	835
Rogers Brown & Crocker Bros., Inc.	742
Charles T. Wilson Co., Inc.	1,664
September 24. By "Steel Ranger," Far East.	
General Rubber Co.	138
Poel & Kelly, Inc.	14
September 26. By "Adriatic," Europe.	
General Rubber Co.	20
September 26. By "Arabic," Antwerp.	
Baird Rubber & Trading Co., Inc.	73
Littlejohn & Co., Inc.	258
September 26. By "Helenus," Far East.	
H. A. Astlett & Co.	1,883
Baird Rubber & Trading Co., Inc.	1,380
General Rubber Co.	3,791
Haldane Bierrie & Co., Inc.	288
Hood Rubber Co.	50
Littlejohn & Co., Inc.	2,752
The Meyer & Brown Corp.....pkgs.	3,735
The Meyer & Brown Corp.....pkgs.	*442
H. Muehlstein & Co., Inc.	1,307
Poel & Kelly, Inc.	436
Raw Products Co.	224
Rogers Brown & Crocker Bros., Inc.	233
Charles T. Wilson Co., Inc.	2,010
September 26. By "Minnesota," London.	
Baird Rubber & Trading Co., Inc.	425
September 27. By "Malayan Prince," Far East.	
H. A. Astlett & Co.	877
Baird Rubber & Trading Co., Inc.	195
Paul Bertuch & Co., Inc.	250
General Rubber Co.	972
Haldane Bierrie & Co., Inc.	359
Adolph Hirsch & Co., Inc.	50
Littlejohn & Co., Inc.	4,619
The Meyer & Brown Corp.....pkgs.	2,010
The Meyer & Brown Corp.....pkgs.	*110
H. Muehlstein & Co., Inc.	168
Poel & Kelly, Inc.	192
Raw Products Co.	876
Rogers Brown & Crocker Bros., Inc.	325
Charles T. Wilson Co., Inc.	1,679
September 27. By "Roseric," Far East.	
H. A. Astlett & Co.	320
Baird Rubber & Trading Co., Inc.	660
General Rubber Co.	880
Littlejohn & Co., Inc.	896
H. Muehlstein & Co., Inc.	50
September 28. By "Pres. McKinley," Singapore.	
Baird Rubber & Trading Co., Inc.	†50
October 3. By "Minnetonka," London.	
Baird Rubber & Trading Co., Inc.	813
General Rubber Co.	804
Charles T. Wilson Co., Inc.	316
October 3. By "Niew Amsterdam," Europe.	
General Rubber Co.	318
October 3. By "Silverbeech," Far East.	
H. A. Astlett & Co.	1,221
Baird Rubber & Trading Co., Inc.	1,050
General Rubber Co.	4,268
Haldane Bierrie & Co., Inc.	327
Hood Rubber Co.	*197
Littlejohn & Co., Inc.	1,947
The Meyer & Brown Corp.....pkgs.	2,524
The Meyer & Brown Corp.....pkgs.	*283
H. Muehlstein & Co., Inc.	1,038
H. Muehlstein & Co., Inc.	*165
Poel & Kelly, Inc.	118
Raw Products Co.	617
Rogers Brown & Crocker Bros., Inc.	280
Charles T. Wilson Co., Inc.	1,971
October 3. By "Tuscania," London.	
Charles T. Wilson Co., Inc.	120
October 6. By "Madioen," Far East.	
H. A. Astlett & Co.	150
General Rubber Co.	2,912
Hood Rubber Co.	*409
Littlejohn & Co., Inc.	1,704
The Meyer & Brown Corp.....pkgs.	1,129
H. Muehlstein & Co., Inc.	562
H. Muehlstein & Co., Inc.	*25
Poel & Kelly, Inc.	215
Rogers Brown & Crocker Bros., Inc.	791
Charles T. Wilson Co., Inc.	505
October 6. By "Pres. Adams," Far East.	
H. A. Astlett & Co.	400
Baird Rubber & Trading Co., Inc.	*198
Baird Rubber & Trading Co., Inc.	332
General Rubber Co.	1,698
Haldane Bierrie & Co., Inc.	1,096
Hood Rubber Co.	*224
Littlejohn & Co., Inc.	2,468
The Meyer & Brown Corp.....pkgs.	2,904
Poel & Kelly, Inc.	100
Raw Products Co.	750
Charles T. Wilson Co., Inc.	451
October 6. B- "Bolivian," England.	
The Meyer & Brown Corp.....pkgs.	*142
October 6. By "City of Calcutta," Far East.	
General Rubber Co.	148
Littlejohn & Co., Inc.	938
October 7. By "Bowes Castle," Far East.	
H. A. Astlett & Co.	624
Baird Rubber & Trading Co., Inc.	880
General Rubber Co.	4,693
Haldane Bierrie & Co., Inc.	819
Adolph Hirsch & Co., Inc.	50
Hood Rubber Co.	202
Littlejohn & Co., Inc.	2,608
The Meyer & Brown Corp.....pkgs.	805
The Meyer & Brown Corp.....pkgs.	*130
H. Muehlstein & Co., Inc.	592
H. Muehlstein & Co., Inc.	*275
Poel & Kelly, Inc.	140
Raw Products Co.	100
Charles T. Wilson Co., Inc.	1,103
October 7. By "Malakuta," Far East.	
H. A. Astlett & Co.	150
Baird Rubber & Trading Co., Inc.	716
General Rubber Co.	50
Haldane Bierrie & Co., Inc.	50
The Meyer & Brown Corp.....pkgs.	330
Poel & Kelly, Inc.	300
Rogers Brown & Crocker Bros., Inc.	56
Charles T. Wilson Co., Inc.	347
October 9. By "Pres. Grant," Far East.	
Poel & Kelly, Inc.	‡100
October 10. By "American Merchant," London.	
Baird Rubber & Trading Co., Inc.	338
Littlejohn & Co., Inc.	1,542
October 10. By "Baltic," Europe.	
General Rubber Co.	20
October 10. By "Peleus," Singapore.	
Baird Rubber & Trading Co., Inc.	400
General Rubber Co.	1,112
Haldane Bierrie & Co., Inc.	550
Littlejohn & Co., Inc.	1,560
The Meyer & Brown Corp.....pkgs.	1,045
H. Muehlstein & Co., Inc.	135
Poel & Kelly, Inc.	939
Rogers Brown & Crocker Bros., Inc.	350
Charles T. Wilson Co., Inc.	356
October 11. By "Steel Traveller," Singapore.	
Baird Rubber & Trading Co., Inc.	796
General Rubber Co.	4,124
Littlejohn & Co., Inc.	1,022
The Meyer & Brown Corp.....pkgs.	234
The Meyer & Brown Corp.....pkgs.	*165
H. Muehlstein & Co., Inc.	585
H. Muehlstein & Co., Inc.	*135
Rogers Brown & Crocker Bros., Inc.	1,344
October 13. By "Carmania," Europe.	
General Rubber Co.	2,128
Poel & Kelly, Inc.	1,301
October 14. By "City of Bedford," Singapore.	
Baird Rubber & Trading Co., Inc.	1,850
General Rubber Co.	3,292
Haldane Bierrie & Co., Inc.	300
Littlejohn & Co., Inc.	9,152
The Meyer & Brown Corp.....pkgs.	4,179
H. Muehlstein & Co., Inc.	1,564
Poel & Kelly, Inc.	185
Raw Products Co.	547
Rogers Brown & Crocker Bros., Inc.	1,212
October 14. By "City of Delhi," Colombo.	
Hood Rubber Co.	*50
October 14. By "Jalapa," Far East.	
Littlejohn & Co., Inc.	38
October 15. By "Mississippi," London.	
Baird Rubber & Trading Co., Inc.	699

Africans

September 22. By "Sheridan," Brazil.	
General Rubber Co.	3
October 6. By "Tomalva," Antwerp.	
Hood Rubber Co.	*1,755

Balata

September 22. By "Sheridan," Brazil.	
Paul Bertuch & Co., Inc.	4

Guayule

September 26. By "Camaguey," Mexico.	
Continental Rubber Co. of New York	2,180
October 4. By "Monterey," Mexico.	
Continental Rubber Co. of New York	2,180
October 10. By "Stal," Mexico.	
Continental Rubber Co. of New York	1,060

Rubber Latex

	Gallons
September 16. By "Silverash," Far East.	
General Rubber Co.	138,009
October 8. By "Bowes Castle," Far East.	
General Rubber Co.	32,627

*Arrived at Boston.
†Arrived at Portland, Oregon.
‡Arrived at Los Angeles.

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
SEPTEMBER 22. By "Sheridan," Brazil.					
H. A. Astlett & Co.	978	...	...	...	...
Paul Bertuch & Co., Inc.	201	...	...	*535	...
General Rubber Co.	843	3	109	104	...
General Rubber Co.	†4	...	...	...	...
Littlejohn & Co., Inc.	1,170	3	51	1,301	...
SEPTEMBER 27. By "American Legion," South America.					
H. A. Astlett & Co.	61	...	28	...	...
Paul Bertuch & Co., Inc.	90	...	8	...	...
OCTOBER 10. By "Aidan," Brazil.					
H. A. Astlett & Co.	328	...	253	153	...
Paul Bertuch & Co., Inc.	492	...	...	...	...
General Rubber Co.	214	3	45	327	...
Littlejohn & Co., Inc.	771	...	102	192	...
The Meyer & Brown Corp. ..*pkgs.*	918	94	...	167	...

*Bales. †Knapsack.

United States Crude and Waste Rubber Imports for 1927 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1927	Total 1926	Balata	Miscellaneous	Waste
January ..... *tons*	42,646	2,378	269	299	144	...	45,736	38,697	106	1,508	447
February	25,326	1,668	213	203	190	...	27,600	34,067	119	935	953
March	33,114	1,176	206	253	329	...	35,078	42,677	82	674	531
April	45,843	1,822	351	229	418	10	48,673	32,678	109	1,317	631
May	33,735	1,872	197	399	364	2	36,569	30,411	68	1,075	1,056
June	31,444	1,057	123	251	317	2	33,194	30,107	85	1,092	230
July	37,060	871	46	388	295	7	38,667	37,087	66	1,030	62
August	31,195	986	29	504	345	9	33,068	25,982	25	882	475
September	31,064	1,117	43	210	364	...	32,798	38,132	40	1,444	220
Total, 9 months, 1927 ..... *tons*	311,427	12,947	1,477	2,736	2,766	30	331,383	.....	700	9,957	4,605
Total, 9 months, 1926 ..... *tons*	290,975	9,613	2,534	3,761	2,929	26	.....	309,838	364	8,527	4,517

Compiled from statistics supplied by the Rubber Association of America, Inc.

Parachute Landing Inflated Rubber Raft

In the development of its aviation service the United States Naval Air Station at Lakehurst, New Jersey, maintains a parachute jumping school which recently conducted a successful test to demonstrate the feasibility of inflating a collapsible boat by an aviator while jumping from a disabled plane, as for example, in the emergency of engine trouble while over water.

The test was made by chief petty officer Alvin Starr in charge of the parachute school who jumped by parachute from a naval blimp at the height of 1,700 feet above Barnegat Bay, with an inflatable rubber raft attached. The inflating equipment consisted of a high pressure bottle charged with helium to provide a quick inflation of the boat which is shown in distended form in the illustration.

Aviator in Pneumatic Life Raft Inflated During Descent

The first attempt to inflate the boat during the descent was a failure due to a faulty inflating valve which became damaged as the demonstrator was getting out of the airship. On this occasion, after several attempts to open the valve he was forced to throw the raft from him before making his landing. On the second attempt, however, repeated a short time later with equipment which provided a faster and more positive inflation, complete success was attained in the demonstration. The time required for inflation of the raft was only 17 seconds and the demonstrator landed inside his raft without getting wet in the slightest degree.

In the insert the aviator is seen perched in the inflated raft about to land on the water, while the main view represents him comfortably smoking a cigarette afloat in the raft in which the parachute is safely stowed at one end while the pressure inflating bottle remains attached at the other.

Apparently landing upon water from a disabled airship is now quite possible with safety provided the drop is made from sufficient height to allow the time necessary for opening the parachute and inflation of the raft.

It is by such daring experiments with facilities specially devised that practical service problems of aviation are being solved and safety of airmen assured in extreme emergencies. Demontrations of this sort are attempted purely in the line of duty for the advance of army and navy air service and not as circus stunts.

A SUBSIDY THAT HELPS MANY

Owners of lorries with six rubber tired wheels are offered £40 sterling annually by the British government. Even though such inducement be part of a military preparedness measure, it reflects indorsement by the army engineers of the superiority of the six wheel over the four wheel truck in many respects, a fact appreciated by American automotive engineers who have long urged the former's advantages.

Model highways can not be built overnight, nor at small expense, but trucks are available which will minimize the faults of roads; and the six wheeled pneumatic tired car is ideally suited for such requirement. It equalizes load distribution and reduces road impact while carrying loads that are staggering, and even at great speed. It is also easier on pavements, saving taxpayers much for upkeep; moreover, it can haul goods at lower ton-per-mile cost, and the overhead for fleets is lower than for the older type. In the long run six wheels prove cheaper than four. Thus while preparing for war the British government is also doing much for peace in conserving its roads and furthering its commerce.